

**A FLUXGATE GRADIOMETER SURVEY OF
LAND AT PEACEHAVEN & TELESCOMBE
FOOTBALL CLUB,
PIDDINGHOE AVENUE,
PEACEHAVEN, EAST SUSSEX**



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Abstract

An archaeological magnetometer survey was carried out on the main football pitch at Peacehaven & Telescombe Football Club in advance of proposals to level the pitch.

Although badly impaired by adjacent metal structures, the results indicate the possible presence of a number of archaeological features.

Recent archaeological research immediately adjacent to the north and west of the football pitch has recorded evidence of a substantial and complex Iron Age settlement comprising of a series of enclosures, droveways, pits and post hole clusters. Excavation also recorded evidence of occupation / activity from the Mesolithic and Neolithic Periods.

1.0. INTRODUCTION

- 1.1 The site is located in the north-eastern area of the town of Peacehaven, East Sussex (TQ41960125). The land subject to this survey forms the main pitch for the Peacehaven and Telescombe Football Pitch located within the Piddinghoe Sports Park, owned by Peacehaven Town Council.
- 1.2. A magnetometer survey of 75% of the football pitch was carried out on 21st April 2008 by members of the Brighton & Hove Archaeological Society under the direction of Greg Chuter Assistant County Archaeologist, ESCC. The area surveyed comprised 4800 square metres covering the western and central areas of the pitch within the crowd barrier.

2.0 DEVELOPMENT PROPOSALS

- 2.1. The pitch is believed to have been formed in the 1950s from a reclaimed arable field. The current groundsman was not aware of any major construction works or soil reduction or increase as part of its formation. The groundsman was also unaware of any subsequent raising or reduction of the pitch since the 1950s. The current surface is therefore likely to be a compacted ploughsoil above subsoil and natural stratigraphies.
- 2.2. Over recent years the pitch has become very uneven and despite emergency repairs continues to degenerate. Proposals have therefore been submitted to remedy this problem and bring the pitch back up to league standards.

- 2.3.** The current proposals are to:
- Rotavate, remove and stockpile topsoil (impact of c.100 mm)
 - Subsoil plough (impact of up to c. 250 mm)
 - Subsoil grade and consolidate (impact of up to c. 100 mm)
 - Topsoil spread and stone pick (impact of compaction)

3.0. GEOLOGY AND TOPOGRAPHY

- 3.1.** The British and Geological Survey Sheet 334 shows the site lies predominantly on Upper and Middle Chalk with pockets of Woolwich Beds.
- 3.2.** The site is located on a flat topped hill bordered on its northern side by an east facing dry valley and on its south by Peacehaven Cliffs. To the east the land rises to Peacehaven Heights and to the west rises gradually to Balcombe Road. The football pitch is on the northern edge of this hill top, which drops in elevation into the dry valley c. 100 metres to the north.

4.0. ARCHAEOLOGICAL BACKGROUND

- 4.1.** There are no scheduled monuments within the proposed development area, although monuments such as barrows (tumuli) and other earthworks are known in the wider landscape. In light of this archaeological importance much of this area of Peacehaven is designated as an Archaeologically Sensitive Area.
- 4.2** The site is situated within farmland thought to have been first ploughed during the Second World War, when the Ministry of Defence acquired the neighbouring land. Since that time archaeological finds, such as fire cracked flint, stone tools, prehistoric pottery etc, have been recorded in the area (Worral 2004a).
- 4.3** In 2004 a program of Field-Walking and a Stage 1 Archaeological Evaluation were carried out at Lower Hodden Farm (Figure 1) (Worral 2004a, 2004b), adjacent and to the north of the site. Results from the evaluation indicated that there was a concentration of activity in the sites' southern section where several pits and series of enclosure were recorded and dated to the Late Bronze Age to Middle Iron Age. Other features recorded during the evaluation included a possible double ditch trackway (containing two fragments of hard hammer worked flint dated to the Bronze/Iron Age), a ditch and a lynchet.

- 4.4 In 2005 Geophysical Survey was carried out in advance of housing development on a site immediately to the west of the sports complex (Tibble 2006). This indicated the presence of landscape features, such as enclosures and trackways, and other features of an archaeological nature. Results of an archaeological evaluation (Riccobonni 2006) comprising of 45 trial trenches, confirmed the presence of archaeological features and the whole site was subsequently fully excavated (Riccobonni *forthcoming*). This excavation is still at the post-excavation analysis stage, but early indications record evidence of important in-situ Mesolithic deposits, an extensive and complex early to mid Iron Age settlement (likely to be agricultural in nature) comprising two droveways meeting at right angles, a number of compound areas or enclosures containing evidence of timber structures and a series of related ditches, pits and other features.
- 4.5. Early and middle Iron Age settlements are extremely rare in East Sussex and fairly uncommon in the South East of England, this settlement complex forms part of a landscape of **regional historical environment importance**.

5.0. SURVEY METHODOLOGY

5.1. *Aims of Geophysical Investigation*

- 5.1.1. The aim of the geophysical survey was to establish the presence / absence, extent, character and significance of any archaeological remains within the development area.

5.2. *Summary of Methodology*

- 5.2.1 A FM36 fluxgate gradiometer was used to survey 4800 sq metres (representing 75% of the total area of the football pitch). The survey grid was set out using a Total Station. The grid was surveyed in to the 1:1000 landline map using tapes, with the northern touch line of the football pitch used as the survey baseline. A 20metre grid was used, comprising 12 grid squares and sampling took place every 0.5 metres.
- 5.2.2. The data was processed using Snuffler V7 and enhanced using despiking filters and numerical smoothing to reduce background noise.

5.3. *Presentation of the results*

- 5.3.1. The results are presented as diagrammatical figures which highlight anomalies in the survey area. Figure 2 represents the raw data plot.

Figure 3 presents an interpretation and the location of geophysical anomalies within the survey area.

6.0. GEOPHYSICAL SURVEY RESULTS

6.1. *Introduction to results*

6.1.1. There are a number of anomalies within the survey area. These anomalies are discussed below and should be viewed in conjunction with figures 2 & 3.

6.2. *Interpretation of the fluxgate gradiometer results*

6.2.1. The anomalies are categorised and discussed in relation to the key in figure 3

6.2.2 Discrete positive anomalies

Ten discrete positive anomalies (1-10) may indicate the presence of ferrous objects or small cut features of possible archaeological and non-archaeological origin. Areas where these anomalies are particularly concentrated may suggest foci of archaeological activity.

6.2.3. Positive anomaly with associated negative response

Three discrete positive anomalies (K – M) may indicate the presence of buried ferrous objects

6.2.3. Linear Anomalies

Eight negative linear anomalies (A- H) (possibly representing cut features with banks) and two small positive linear anomalies (I – J) (possibly representing cut features). These anomalies may indicate the presence of cut features such as enclosure / structure ditches, field boundaries or droveway boundaries.

6.2.4. Magnetic disturbance

Two areas of positive area magnetic trends (16-17) may indicate cut features of archaeological origin. Eight areas of magnetic debris (11-15) and other areas of irregular disturbance are evident within the survey data. This effect is caused by close proximity to ferrous objects such as the crowd barrier, metallic structures and buried objects, although there is a possibility that some be archaeological cut features.

7.0. DISCUSSION

7.1. *Significance of results*

7.1.1 The survey was relatively successful in identifying a number of anomalies that may represent archaeological features. The survey was however badly affected by the presence of nearby metal structures and thus limits interpretation around the perimeter. The central and eastern areas did produce a clearer image, containing a concentration of both linear and discrete anomalies.

7.1.2. The negative linear anomalies are represented by two pairs of parallel features (A-D), possibly representing driveway ditches, the southern of which cuts or underlies a circular feature (F-H), which may represent a burial mound ditch or circular enclosure ditch. Two small positive anomalies (I-J) may also represent short lengths of ditch or pits.

7.1.3. The discrete anomalies are represented by a definite concentration comprising of two areas of magnetic disturbance within a cluster of discrete anomalies (3-10 & 14-15), this area is a potential foci for archaeological features. The southern area of the survey grid contains a number of isolated area and discrete anomalies that may represent archaeological activity.

7.2. *Statement of Indemnity*

7.2.1. Geophysical survey is the collection of data that relates to subtle variations in the form and nature of soil. Magnetic detail survey may not always detect sub-surface archaeological features. This is particularly true when considering earlier human activity that are not characterised by sedentary social activity.

8.0. CONCLUSION

8.1. The technique has worked on this geology although it was badly distorted in many areas due to the magnetic influence of the metal crowd barrier and a large metal telephone mast.

8.2. The results of fluxgate gradiometer survey suggest that cut features, probably of archaeological origin exist below the football pitch. Given the proximity of Iron Age archaeological features relating to a large settlement, there is a strong probability that some if not all of the features identified are of that date. This however could only be determined by intrusive evaluation and / or excavation.

9.0. POTENTIAL MITIGATION

9.1. In light of the archaeological potential of this site and its importance not only within the Peacehaven landscape but its probable rarity regionally, it is important that archaeological mitigation is instigated as part of the proposed reformation of the football pitch. Data from the adjacent archaeological excavations shows that archaeological features survive in good condition below a ploughsoil / topsoil horizon at a depth between 300 – 450 mm below ground surface. The total impact including impact from compaction will clearly damage if not destroy any archaeological features that may exist on this site.

9.2. A number of options are available to mitigate this impact:

- **Preservation in situ**, by raising the current surface through the import of suitable soil / material. This would be the preferred archaeological option.
- **Reduction of impact depth**, by only removing and relaying the topsoil, there will however still be issues relating to damage by heavy plant compaction and the exposed surface would require visible features to be recorded and sampled, possibly involving the excavation of exposed sensitive artefacts / deposits
- **Preservation by record**, requiring the controlled removal of the topsoil / subsoil and all identified archaeological features recorded and excavated in accordance with a *Written Scheme of Investigation* and The East Sussex County Council '*Standards For Archaeological Fieldwork, Recording, And Post-Excavation Work In East Sussex*'. In light of the potential complexity and extent of archaeological activity on this site and issues relating to post-excavation analysis this work would normally be carried out by a commercial archaeological contractor. It is realised however that the cost of this would be outside the budget for these proposals, and it may be an option for this work to be carried out as a community project undertaken by the Brighton & Hove Archaeological Society. There would still be a nominal expense to cover the society's costs and the organisation of plant / liaison with the contractor would need to be project managed by the ESCC Landscape Team. The ESCC archaeology team would be able to provide archaeological advice and carryout monitoring site visits.

10.0 ACKNOWLEDGEMENTS

- 10.1. The author would like to thank the Peacehaven and Telescombe Football Club for allowing access onto site. The author is indebted to David Stavley for carrying out the survey and processing the data and to Steve & Eva Corbett, Bob Washington and Donna Angel for assisting with the survey.

11.0 REFERENCE

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ESHER

Site Location
and adjacent
archaeological sites

Legend

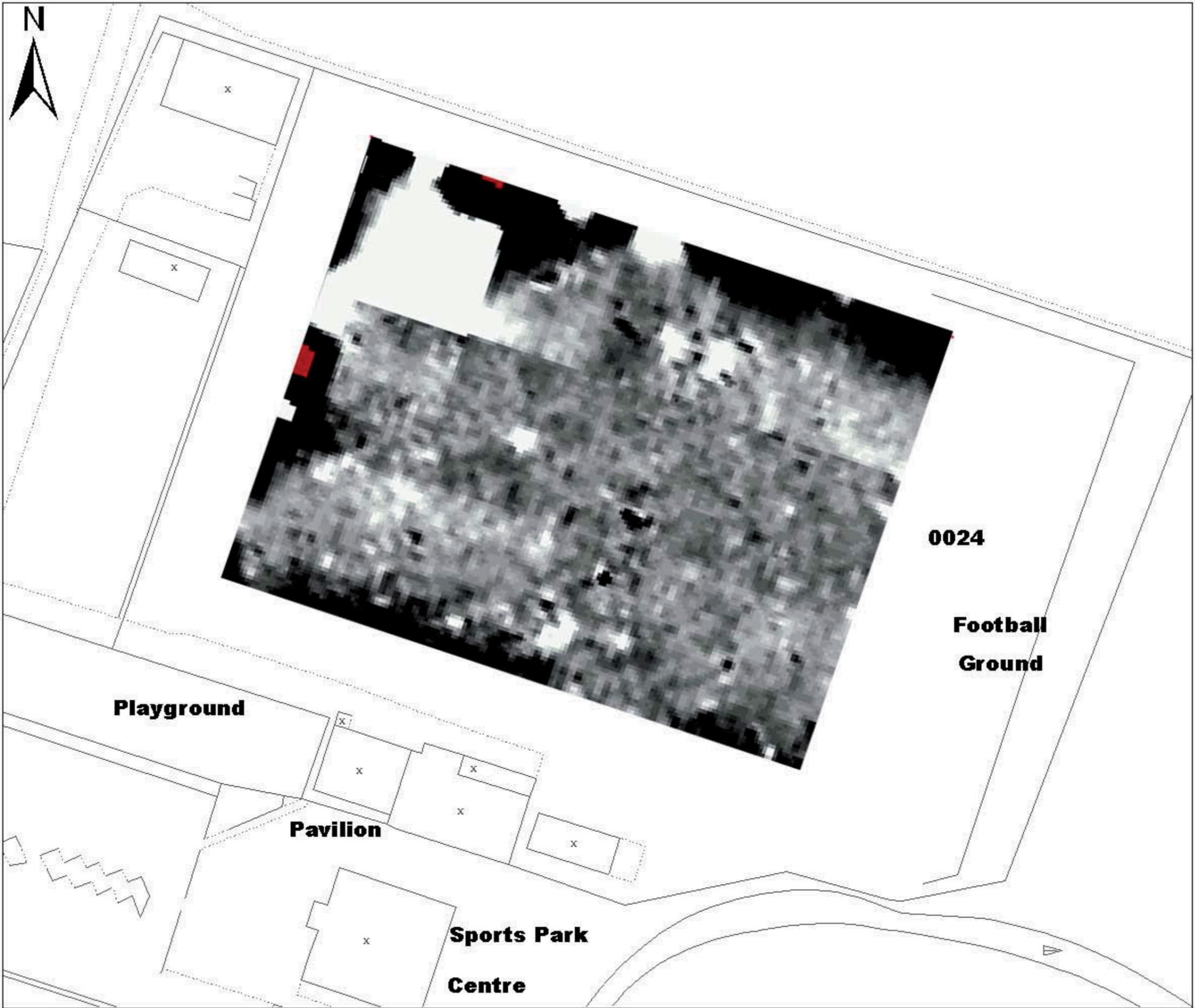
-  Site location
-  Feature Identified from Mapping
-  Feature Identified from Aerial Photography
-  Feature Identified from Geophysical Survey

Drawn by:
On:

0 62.5 125 250 375 500
Meters

1:5,000

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ESHER

Peacehaven Football Ground 2008

Magnetometer Survey
Raw Plot

Document: phproc
 Grid Width: 160 (80 m)
 Grid Height: 120 (60 m)
 Orig. Sample Size: 1.00 x 0.50m
 New Sample Size: 0.50 x 0.50m

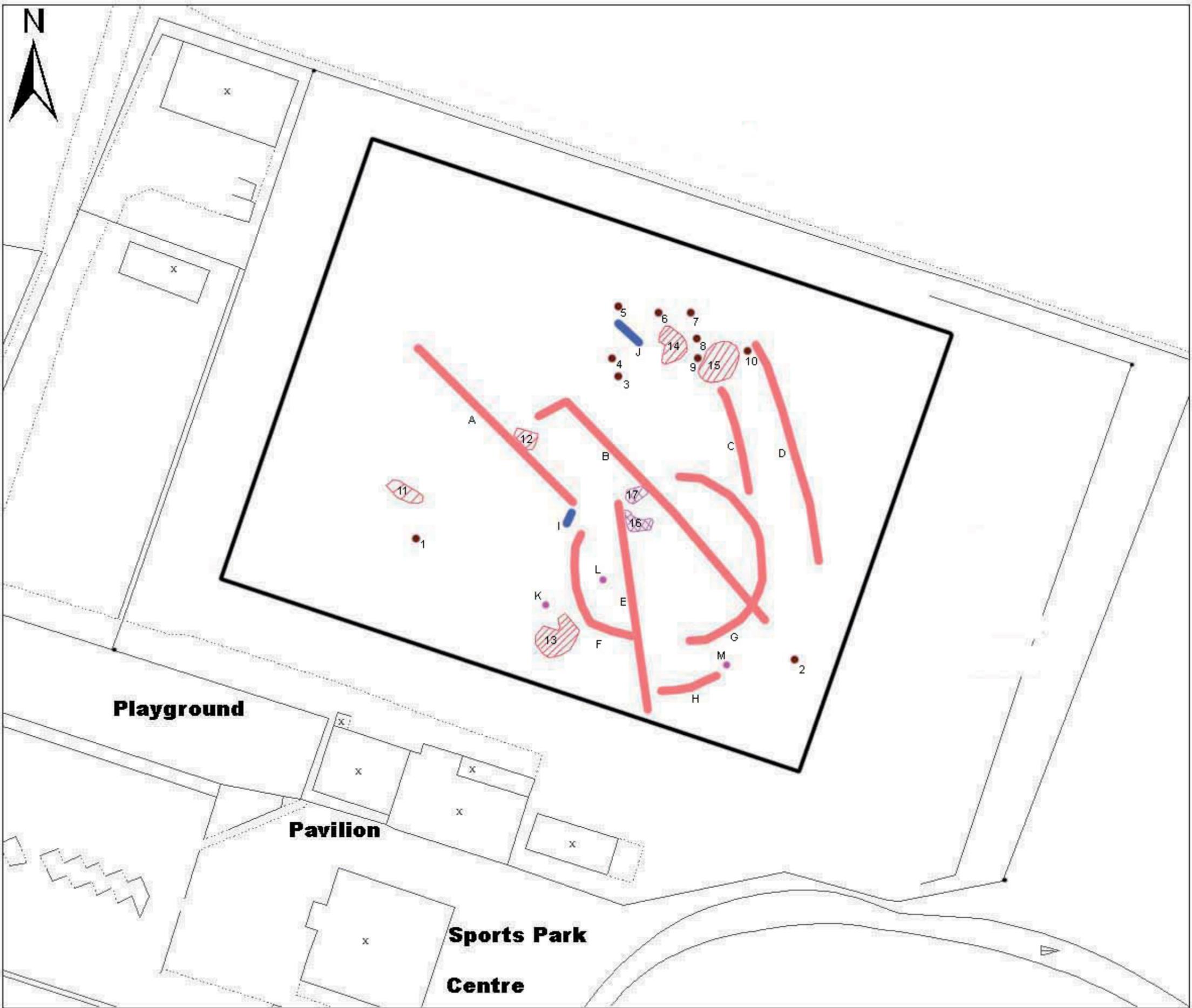


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1:500



ESHER

Peacehaven Football Ground 2008

Interpretation

KEY (Based on Stratascan definitions)	
	Discrete positive anomaly - possible pit
	Positive anomaly with associated negative response - ferrous object
	Positive linear anomaly - cut feature of possible archaeological origin
	Negative linear anomaly with negative response - cut feature with bank of possible archaeological origin
	Linear anomaly - possibly related to land drains
	Positive area trend - possible archaeological origin
	Area of magnetic debris - evidence of ground disturbance
	Area of magnetic disturbance
	Possible thermoremnant response

Drawn by: Greg Chuter
 On: 21st April 2008

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