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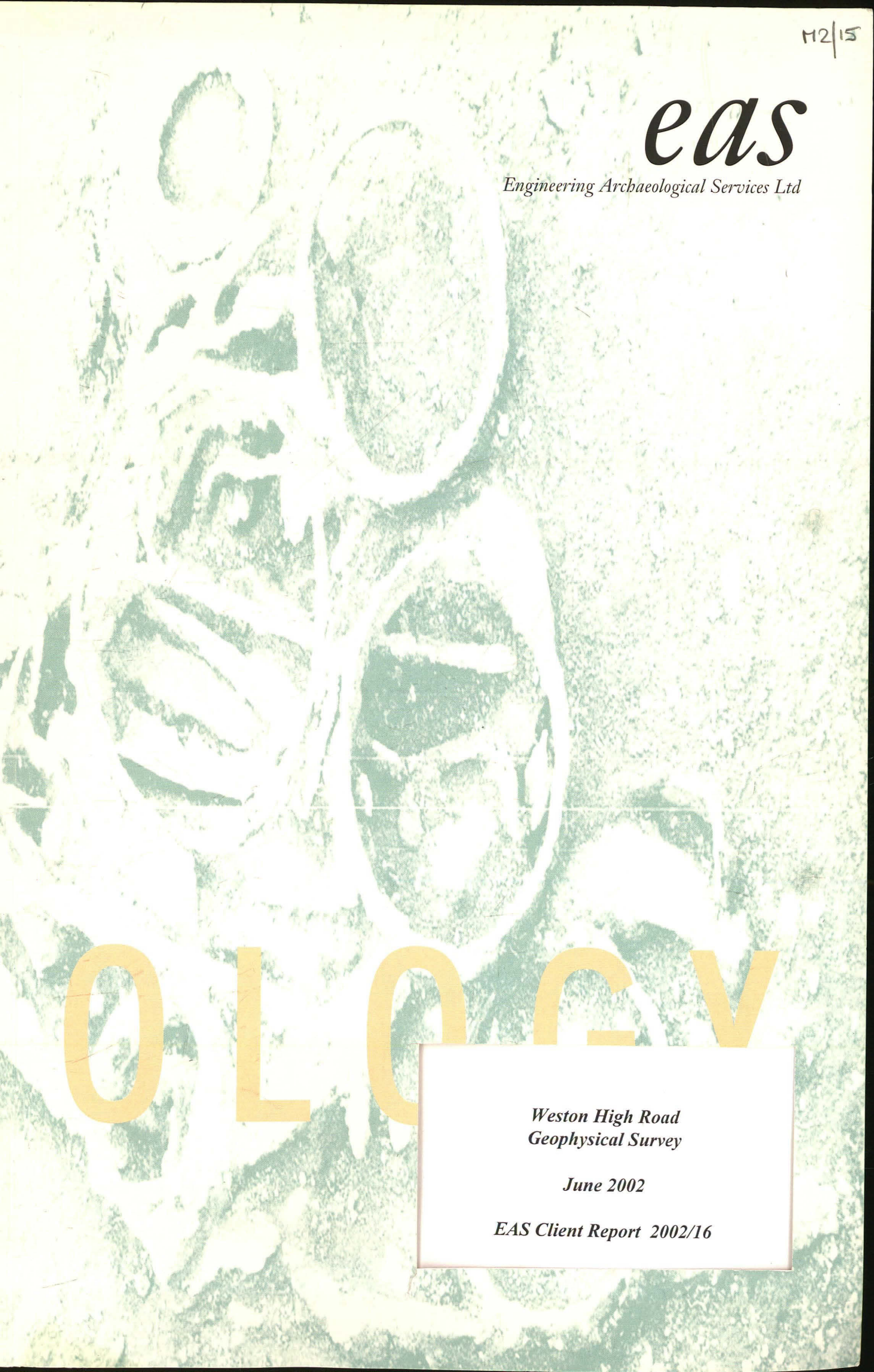
Engineering Archaeological Services Ltd



Weston High Road Geophysical Survey

June 2002

EAS Client Report 2002/16

Event 113132
113133
Source 17844. PRN 23978

L17742

Survey Commissioned
by
Archaeological Project Services

Surveyed
by
I.P. Brooks
Engineering Archaeological Services Ltd.

registered in England
No 2869678

Weston High Road
Geophysical Survey

June 2002

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CONTENTS

Weston High Road, Geophysical Survey - Introduction:

NGR

Centred on TF 28192 24569

Location and Topography

The survey area lies between the junction of Weston High Road and the A 151, now re-aligned to bypass the village of Weston, Lincolnshire. The eastern side of the survey area was marked by the access road to the "Fun Farm" and the Baytree Nursery and Garden Centre. The eastern and northern sides of the area were marked by a plastic sheep fence held up by iron road pins. There was also a banner in the field held up by iron supports.

Approximately a third of the survey area was under short grass and had been used for car boot sales. It was therefore highly compacted and contained a thin spread of modern debris. The remaining area was ploughed, harrowed and weathered, until recently it had been a strawberry field. At the northern end of the survey area, the remains of a large bonfire was noted. This contained a spread of metal objects.

Archaeological Background

Roman activity was recorded during the construction of the bypass, by Archaeological Project Services, to the north of the survey area. Archaeological conditions were therefore imposed on the current development.

Aims of Survey

To gather sufficient information to establish the location and extent of any archaeological features within the development area and, if possible, to characterise the archaeology located.

SUMMARY OF RESULTS

The survey area would appear to be on variable geology giving rise to mottling on the grey scale plot, however a linear anomaly was noted together with two possible enclosures.

The survey area was also crossed by a modern service pipe and areas of disturbance associated with a modern bonfire, the banner supports and debris alongside the roads were also defined.

Weston High Road, Geophysical Survey -Results:

Methods

The survey was undertaken using parts of fourteen 30 x 30 m grid squares laid out as in Figure 1. Readings were taken at 0.5 m intervals along transects 1 m apart. These transects were walked in a zigzag pattern.

The survey was carried out using a Geoscan FM 36 Fluxgate Gradiometer with a ST 1 sample trigger. Grey Scale and X - Y Plots were produced using Geoscan Research "Geoplot" v. 3.00e.

Survey Results:

Area

An area of approximately 1.0 ha was investigated (Figure 1).

Display

The results are displayed as Grey Scale Image and as X-Y Trace Plots. Figures 2 and 3.

Results:

The most dominant anomaly is the result of the modern service pipe which crosses the survey area between Grids 2 and 13. Other areas of modern disturbance include the site of the modern bonfire in Grids 5 and 10, the banner supports in Grid 1 and the disturbance associated with the modern roads bordering the area. These anomalies are shown in blue on Figure 4.

The area would appear to have variable underlying geology giving rise to the slightly mottled appearance on the grey scale plot (Figure 2). This is particularly marked in the south west section of the survey area and is shown in Green on Figure 4.

A limited number of anomalies of possible archaeological origins were defined. The first of these is a straight, linear anomaly running between Grids 6 and 4.

Two possible enclosures were also defined. A smaller, sub rectangular enclosure in the southern half of the survey area would appear to have a possible entrance in its southern side and cover an area of approximately 40 x 40 m.

A second, larger possible enclosure is to the north of the service pipe. Only three side have been defined covering an area of approximately 55 x 30 m. It is possible that some of the mottling on the grey scale plot within this enclosure may be the result of archaeological activity, however it is impossible to discriminated between slight archaeological activity and geological disturbance.

The anomalies of possible archaeological origins are shown in red on Figure 4.

Magnetic Susceptibility

Soil samples were taken from the area of detailed survey in order to assess the magnetic susceptibility of the soils. It was not possible to obtain a subsoil sample comparison .

Sample	Volume susceptibility χ_v	Mass susceptibility χ_m
Grid 1	14	14.0
Grid 3	11	12.6
Grid 5	13	13.1
Grid 7	11	12.5
Grid 9	13	13.0
Grid 11	10	11.6
Grid 13	13	12.9

The susceptibilities as measured are consistent and relatively low suggesting that conditions were not ideal for magnetic survey.

Weston High Road, Geophysical Survey - Conclusions:

Conclusions

It is a fundamental axiom of archaeological geophysics that the absence of features in the survey data does not mean that there is no archaeology present in the survey area only that the techniques used have not detected it.

Unfortunately the magnetic regime in the field was not ideal for magnetic survey, however, two possible, sub-rectangular enclosures were located together with a linear anomaly. The southern possible enclosure would appear to be approximately 40 x 40 m in size with a possible entrance in its southern side. The northern possible enclosure, although is clear in places, is generally less defined. Only three side have been defined suggesting a minimum size of 55 x 30 m. Other magnetic anomalies were the result of either geological or modern disturbance.

Weston High Road, Geophysical Survey -Technical Information:

Techniques of Geophysical Survey:

Magnetometry:

This relies on variations in soil magnetic susceptibility and magnetic remenance which often result from past human activities. Using a Fluxgate Gradiometer these variations can be mapped, or a rapid evaluation of archaeological potential can be made by scanning.

Resistivity:

This relies on variations in the electrical conductivity of the soil and subsoil which in general is related to soil moisture levels. As such, results can be seasonally dependant. Slower than Magnetometry this technique is best suited to locating positive features such as buried walls that give rise to high resistance anomalies.

Resistance Tomography

Builds up a vertical profile or pseudosection through deposits by taking resistivity readings along a transect using a range of different probe spacings

Magnetic Susceptibility:

Variations in soil magnetic susceptibility occur naturally but can be greatly enhanced by human activity. Information on the enhancement of magnetic susceptibility can be used to ascertain the suitability of a site for magnetic survey and for targeting areas of potential archaeological activity when extensive sites need to be investigated. Very large areas can be rapidly evaluated and specific areas identified for detailed survey by gradiometer.

Instrumentation:

1. Fluxgate Gradiometer - Geoscan FM36

2. Resistance Meter - Geoscan RM4/DL10

3. Magnetic Susceptibility Meter - Bartington MS2

4. Geopulse Imager 25 - Campus

Methodology:

For Gradiometer and Resistivity Survey 20m x 20m or 30m x 30m grids are laid out over the survey area. Gradiometer readings are logged at either 0.5m or 1m intervals along traverses 1m apart. Resistance meter readings are logged at 1m intervals. Data is down-loaded to a laptop computer in the field for initial configuration and analysis. Final analysis is carried out back at base.

For scanning transects are laid out at 10m intervals. Any anomalies noticed are where possible traced and recorded on the location plan.

For Magnetic Susceptibility survey a large grid is laid out and readings logged at 20m intervals along traverses 20m apart, data is again configured and analysed on a laptop computer.

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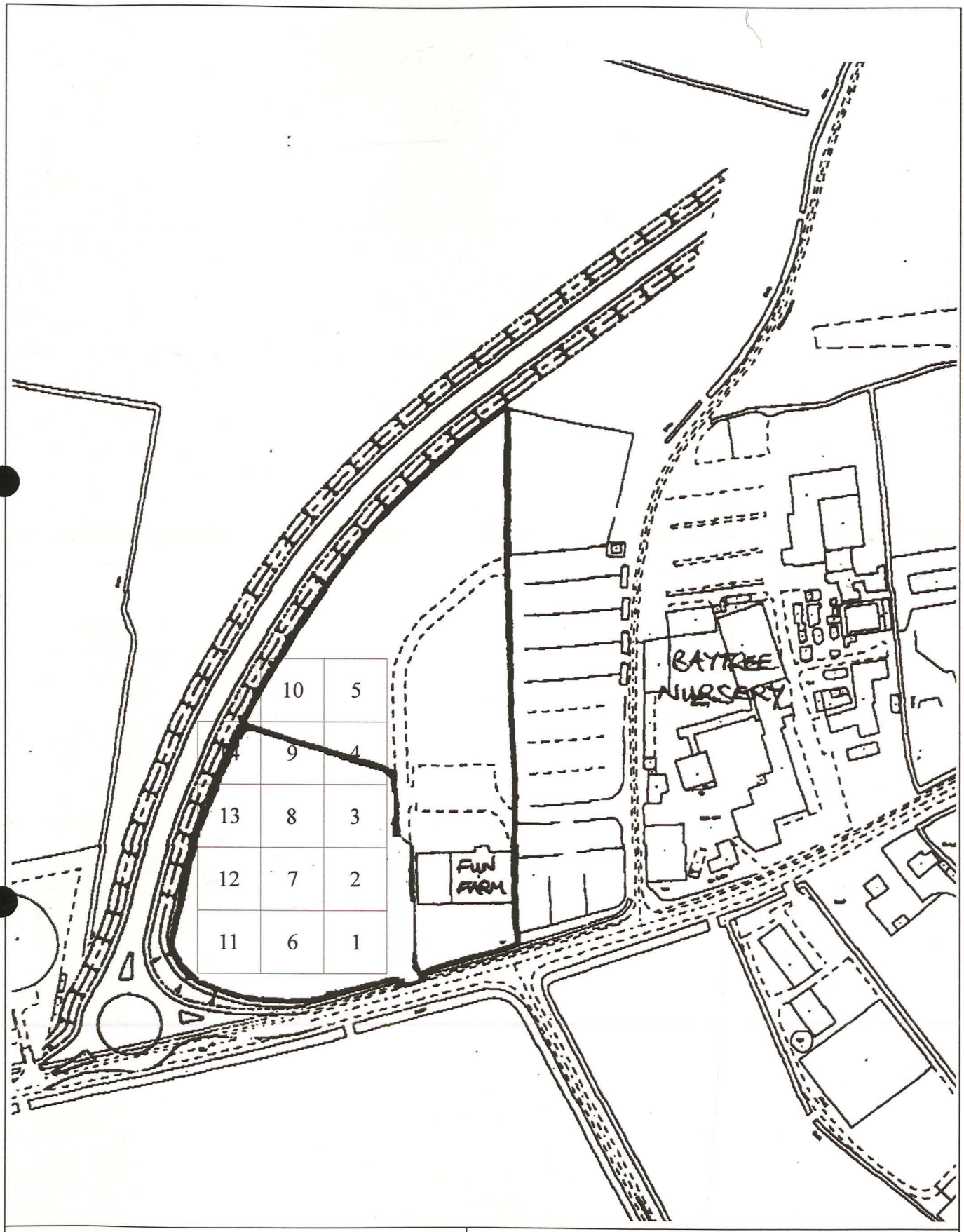

Figure 1: Weston High Road
Location
Scale 1:2500

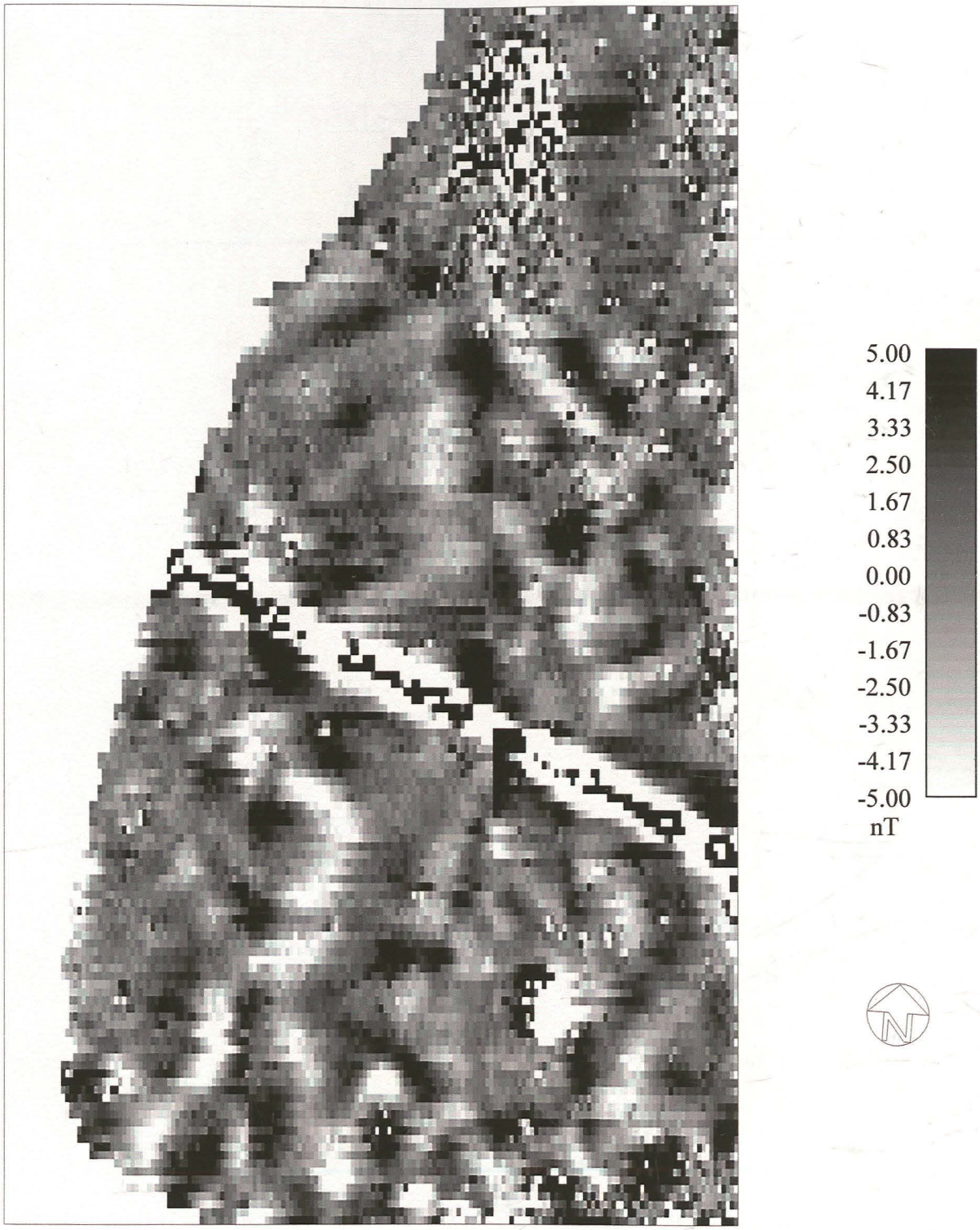

Figure 2: Weston High Road
Grey Scale Plot
Scale 1:750

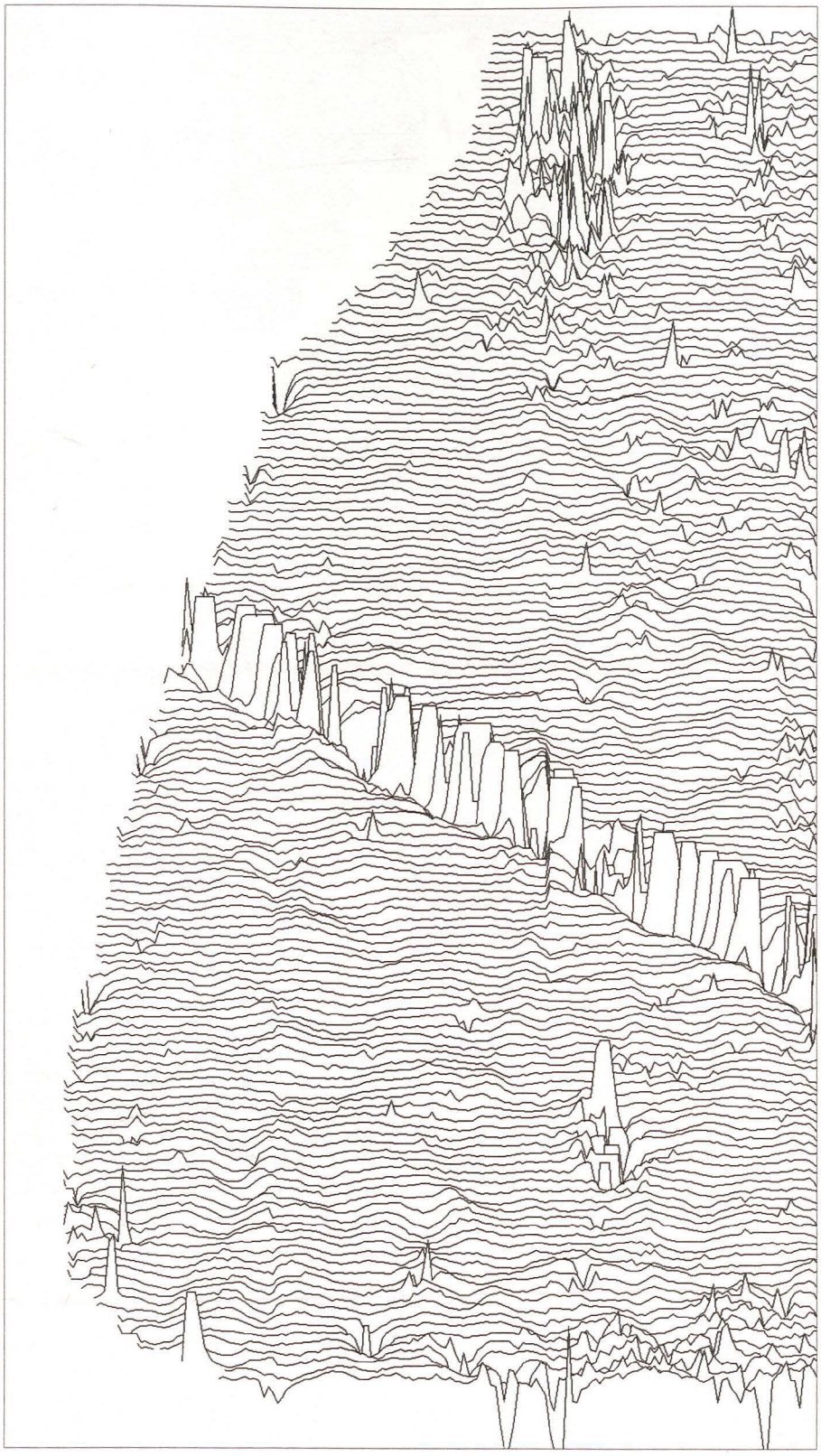

Figure 3: Weston High Road
X - Y Plot
Scale 1:750

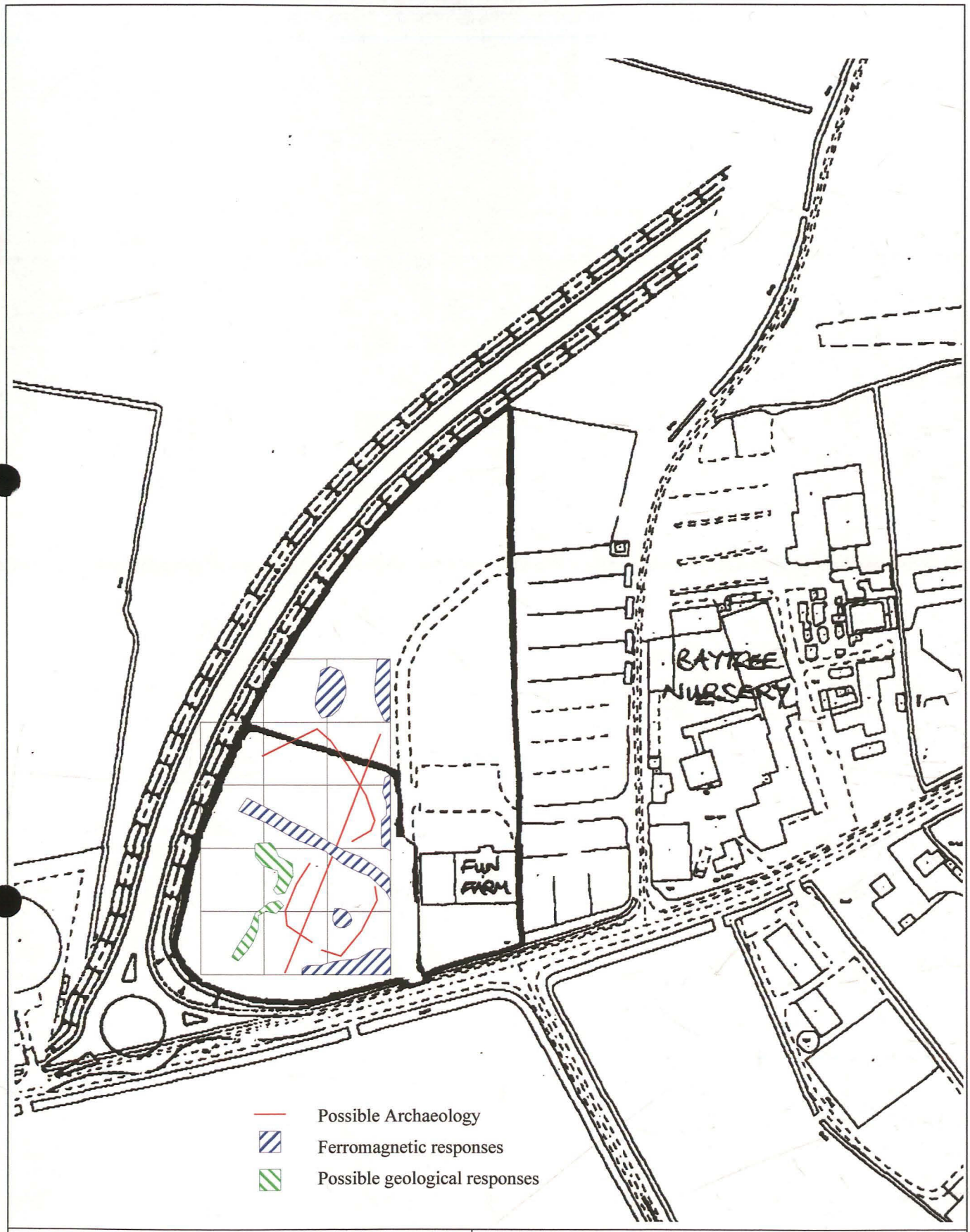

Figure 4: Weston High Road
Interpretation
Scale 1:2500