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Durrington Walls Henge, Wiltshire. Report on Geophysical Survey, April 2004

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Summary

A fluxgate magnetometer survey was carried out over the southern portion of the Neolithic henge at Durrington Walls extending across the ploughed out southern bank of Durrington Walls to the smaller neighbouring henge monument of Woodhenge. In addition to expanding the previous magnetometer coverage of Durrington Walls, the purpose of the survey was to attempt to map any traces of archaeological features linking the two adjacent henges such as an avenue, or approach structures formed by ditch or pit alignments. Conditions for magnetic survey in the area between the henges were poor due to extensive interference from ferrous material near the modern field boundaries and road lines. No obvious features linking the two henges were detected, with the exception of two very weak and tentative linear anomalies north and south of the expected southern entrance of Durrington Walls. The survey has revealed a considerable number of significant anomalies not directly related to the henge but nevertheless of interest in the area south and west of the bank of Durrington Walls and north of Woodhenge. These anomalies include an apparent enclosure, ditched boundaries and a possible trackway.

Keywords

Geophysical Survey

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DURRINGTON WALLS HENGE, WILTSHIRE

Report on Geophysical Survey, April 2004

Introduction

Durrington Walls (SAM No. 10365) are the degraded remains of a later Neolithic henge monument of massive proportions located on the upper slopes of the Avon valley at NGR SU 150437 in the Stonehenge World Heritage Site. The original form of the henge earthwork is now difficult to discern on the ground due to the long term effects of agriculture and soil movement. Detailed descriptions of the monument are published in Royal Commission on the Historical Monuments of England (RCHME) (1979), Wainwright (1990) and Souden (1997) and in the reports on earlier geophysical surveys conducted in 1996 and 2003. The site is located on Cretaceous upper chalk and chalky drift (colluvium) overlain by shallow well-drained calcareous silty soils of the Andover 1 and Coombe 1 associations (Geological Survey of England and Wales, 1967; Soil Survey of England and Wales 1983).

Following successful fluxgate magnetometer survey of the eastern part of Durrington Walls in 2003 and the central and western part of the henge in 1996 (Payne 2003, Parker Pearson *et al.* 2003, Wiltshire Archaeological and Natural History Magazine (WAM) 1998 and David and Payne 1997), further survey was undertaken on the far southern side of the henge in April 2004 (Figure 1) resulting in near total coverage of the monument. The extension of the survey encompassed the plough degraded henge bank around the southern perimeter of the monument, the area between the bank and the henge ditch (here separated from the bank by a wide berm) and the area in between Durrington Walls and the smaller adjacent henge monument of Woodhenge (also part of SAM No. 10365). In addition to extending the magnetometer coverage of the monument into the previously unsurveyed area to the south, the main aim of the survey was to explore the area between the adjacent henges in an attempt to identify any archaeological features linking the two, such as avenue or post-pit alignments. A further objective was to attempt to define the position of a putative entrance on the southern (Woodhenge facing) side of Durrington Walls, that might be indicated by an interruption in the circuit of the henge ditch. These objectives were designed to support ongoing research at the monument (Parker Pearson 2004).

All of the areas surveyed were under short grazed or mown grassland. The main part of the survey covered the long narrow field directly north of Fargo Road (Area 1, Figure 1) with an extension to the north to cover the henge ditch in the far south eastern corner of the field to the north (Area 2), the majority of which was covered by the 1996 survey of the western henge interior. Area 1 is separated from the henge interior by a field boundary running along a steep lynchet that has formed as a result of long term

cultivation – soil from the ploughed-out bank having been moved downhill into the former ditch. The lynchet slopes down into the henge and partially obscures the line of the former henge ditch along the south side of the monument. The lynchet and the trees planted along it prevented the henge ditch from being fully resolved in this area in the 1996 survey (see Payne 2003 and Figures 7 and 8). Area 1 also included a narrow strip of the grass roadside verge on the western side of the old road crossing through Durrington Walls where it leads up to the junction with Fargo Road (see Figure 1). Despite the small size of this area it was important to include it as it lies directly in line with the entrance and the axis of Woodhenge. Further extensions were made to the south and east to explore the entrance to Woodhenge for features extending beyond it towards Durrington Walls (Area 3) and the area north-east of the Woodhenge visitor parking lay-by (Area 4). The survey coverage in Area 4 was constrained by numerous sources of strong magnetic interference and other surface obstructions in the area around the Woodhenge car-park including traffic barriers, road signage, litter bins, trees and bushes and stationary vehicles.

Methods

The survey was undertaken with Bartington Grad601 fluxgate gradiometers on a 30m grid set out over the site using a Trimble 4800 series differential Global Positioning System (GPS). Due to the requirement to locate potential minor features such as pits constructed to retain large timber post settings in the area between Woodhenge and Durrington Walls, a selected area was surveyed using closely spaced instrument traverses set 0.5m apart (see hachured area on Figure 1). The remainder of the survey was carried out using traverses spaced 1.0m apart. In both cases readings were recorded at intervals of 0.25m along traverses to the nearest tenth of a nT/m (nanotesla per metre).

Processing of the data involved the initial use of range truncation to remove extreme outlying values (readings less than -150 or greater than +150 nT/m) caused by ferrous objects. The effects of instrument drift and imbalances between the dual fluxgate sensors in the Grad601 configuration were corrected by adjusting each line of data to a zero mean. Articles of ferrous litter are particularly widespread in the area of Durrington Walls due to rubbish tipping around the margins of the site in the 19th century associated with military occupation at nearby Larkhill. In order to counter this problem further processing was undertaken to selectively remove the numerous localised extreme readings (or 'spikes') caused by ferrous material in the topsoil using a median filter where every value outside a specified threshold is replaced by a local median calculated from neighbouring values within a 1.0m radius.

The range truncated and drift corrected data are presented in the form of greyscale and traceplots at 1:1250 scale in Figures 2 and 3 respectively. An additional greyscale plot of the data following the further removal of localised extreme readings ('despiking') is presented in Figure 4. Plots of the detailed higher resolution (0.5m traverse interval) magnetometer data collected in the area between the two henges are presented in Figures 5 and 6. The 2004

data has been combined with the earlier data-sets acquired in 1996 and 2003 in Figure 7 and an overall interpretation of the combined surveys is provided in Figure 8. The combined data presented in Figure 7 was processed with a 1.0m radius Gaussian low-pass filter to suppress high frequency noise.

Results

Numerical references in bold type below indicate the location of specific anomalies referred to in the text on Figure 8.

AREA 1 – large narrow field immediately north of Fargo Road

The survey has detected a considerable amount of archaeological activity in the area between Durrington Walls and Woodhenge north of Fargo Road. Much of this probably relates to post Neolithic occupation in the areas immediately to the south and west of Woodhenge (including Middle Bronze Age and Romano-British activity documented in RCHME (1979)) rather than features directly associated with the henges.

In the southern part of Area 1 nearest to Woodhenge, immediately adjacent to the modern road, the survey has mapped the ditches defining three sides of an enclosure as a series of positive linear magnetic anomalies [**1**]. This enclosure is offset just to the west of the entrance to Woodhenge possibly deliberately so, perhaps in order not to obstruct the approach to the henge. West of this and also running under the modern road to the south is a double-ditched feature defined by parallel positive linear anomalies [**2**]. This may represent a continuation of a probable trackway-type feature known from aerial photography (and probably part of a system of rectangular fields and enclosures) in the large field south and west of Woodhenge, west of Cunnington's Middle Bronze Age "Durrington Egg" enclosure (RCHME 1979, Plate 16; Cunnington 1929, Plate 2). Anomaly [**2**] initially runs north-south and then appears to stop abruptly and change direction where it, presumably, meets the now ploughed-out southern section of the bank of Durrington Walls. This suggests that the henge bank was still a major obstacle to be respected when the ditched track-way was established. In common with the bank on the eastern side of the henge, surveyed in 2003, the southern arc of the bank is characterised by a disturbed magnetic response with occasional, stronger, localised positive magnetic anomalies that still require adequate explanation. There is possibly some sort of feature within the bank (or cut into it) at [**3**] defined by a group of positive localised magnetic anomalies, although this may be due to ground disturbance from burrowing animals observed at the time of the fieldwork. In the western part of the survey there is a wide and very straight positive linear anomaly running for a distance of 200m on a northwest to southeast alignment [**4**]. This probably represents a major ditched boundary or a roadway associated with Romano-British occupation at Larkhill to the west. It is probable that [**4**] cuts through the earlier more meandering trackway or ditch [**2**] and that [**2**] itself may continue to the west of [**4**].

With the exception of the main anomalies described above arising from ditches, occasional scattered possible pit-type anomalies are also present –

generally lying on the line of the ploughed out henge bank - and a number of weakly defined linear and curvi-linear anomalies that may possibly relate to archaeological features but cannot be interpreted with much confidence. One of these weak linear anomalies [**5**] appears to run in a straight line north towards the possible southern entrance into the henge for a distance of approximately 40m possibly continuing on the other side of an area of strong ferrous magnetic disturbance into the henge for a further 30m. These may be similar to the linear features observed in the 2003 magnetometer data outside the eastern entrance to the henge (Payne 2003) later proved through excavation (Parker Pearson *et al.* 2003), but given the limited definition and tentative nature of the anomalies and the nearby ferrous interference their archaeological significance should be treated with considerable caution.

The area south of the henge bank contains responses to former ploughing running approximately east-west parallel with the southern field boundary along Fargo road [**6**].

AREA 2 – overlap with south-east corner of 1996 survey

The likely terminal of the main henge ditch in the small area omitted in 1996 cannot be confirmed because of the effect of a collapsed and half buried barbed wire fence and other near surface ferrous material in the vicinity. On this albeit limited evidence, it seems likely that the older (now closed off) road utilised former entrance gaps present on the north and south sides of the henge and the southern entrance (if it exists) may be largely obscured by the road.

AREA 3 - Woodhenge

The survey has clearly located the northern entrance terminals of the Woodhenge ditch as broad positive magnetic anomalies 8m wide [**7**] incorporating some more strongly magnetic ferrous responses probably linked to Cunnington's excavation of the ditch terminals and causeway in the 1920s (Cunnington 1929). A series of very weak and localised positive anomalies are present in the area of the entrance causeway across the ditch and the gap in the bank. They may represent small pits associated with the henge entrance although they do not appear to agree with the positions of post-holes in the entrance area recorded in Cunnington's report. It is possible that these anomalies may be artefacts of the earlier excavations.

AREA 4 – area northeast of Woodhenge car-park

There is considerable intense magnetic disturbance in this area due to the presence of a modern pipe and other ferrous material. One weak positive anomaly of possible archeological significance [**8**] lies in the north of the survey coincident with the expected line of the henge bank.

Conclusions

Despite the use of high resolution sampling intervals, no evidence for the expected south entrance of Durrington Walls and any hoped for avenue or approach-type features linking Woodhenge and Durrington was found. The survey in this area was severely hampered by the high degree of magnetic disturbance resulting from ferrous material of recent origin along the road verges and field boundaries, road signage, buried pipes and the metal boundary fences themselves. Because of this high magnitude of interference any weaker archaeological responses will have been masked by the stronger and larger scale ferrous effects.

With the possible exception of some tentative linear anomalies at [**5**] described above, the survey has not succeeded in revealing much information on the layout of the two Neolithic henges and how they might have articulated, including the presence of linking features such as ditched or post-hole avenues. Although it is far from certain if any access or processional routes would be present, the possibility of locating traces of such features in the area north of the entrance of Woodhenge would be very limited owing to the widespread presence of ferrous material along the modern road margins.

The main contribution of the current survey is the considerable amount of evidence for unrelated archaeological activity in the environs of Durrington Walls and Woodhenge. Numerous archaeological responses have been mapped in the area bordering Durrington Walls to the south including ditched boundaries, trackways and enclosures all appearing to respect the now ploughed-out southern arc of the henge bank. Similar to the results from within Durrington Walls, the majority of the anomalies in the new survey probably relate to subsequent use of the landscape in later prehistory and the Roman period. A Romano-British occupation site is present just to the south-west of the survey area at Larkhill and a Bronze Age occupation site explored by Cunnington in 1928 (Cunnington 1929) exists 800m south of Woodhenge. This evidence combined with the new geophysical data suggests that Durrington Walls is set within a landscape of considerable archaeological complexity.

Surveyed by:	L Martin A Payne	Date of survey:	19-23 April 2004
Reported by:	A Payne	Date of report:	30 September 2004

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LIST OF INCLUDED FIGURES

FIGURE 1

DURRINGTON WALLS HENGE, WILTSHIRE Location of Fluxgate Magnetometer Survey 2004

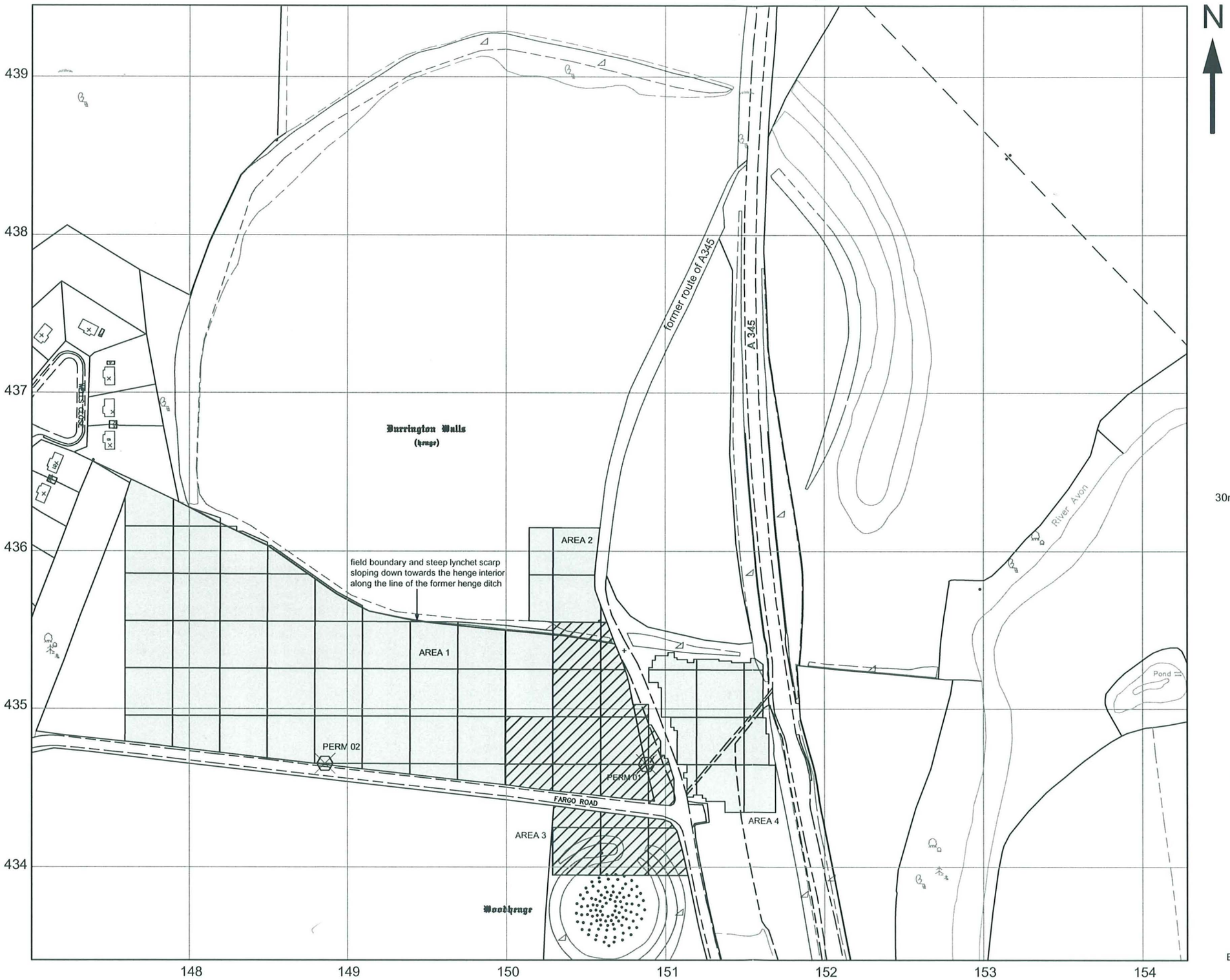

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FIGURE 2

DURRINGTON WALLS HENGE, WILTSHIRE Fluxgate Magnetometer Survey, April 2004

GREYSCALE PLOT OF MAGNETOMETER DATA AFTER INITIAL RANGE TRUNCATION
(beyond -150 to +150 nT/m) AND DRIFT CORRECTION

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FIGURE 3

DURRINGTON WALLS HENGE, WILTSHIRE Fluxgate Magnetometer Survey, April 2004

TRACEPLOT OF MAGNETOMETER DATA AFTER INITIAL RANGE TRUNCATION (beyond -150 to +150 nT/m) AND DRIFT CORRECTION

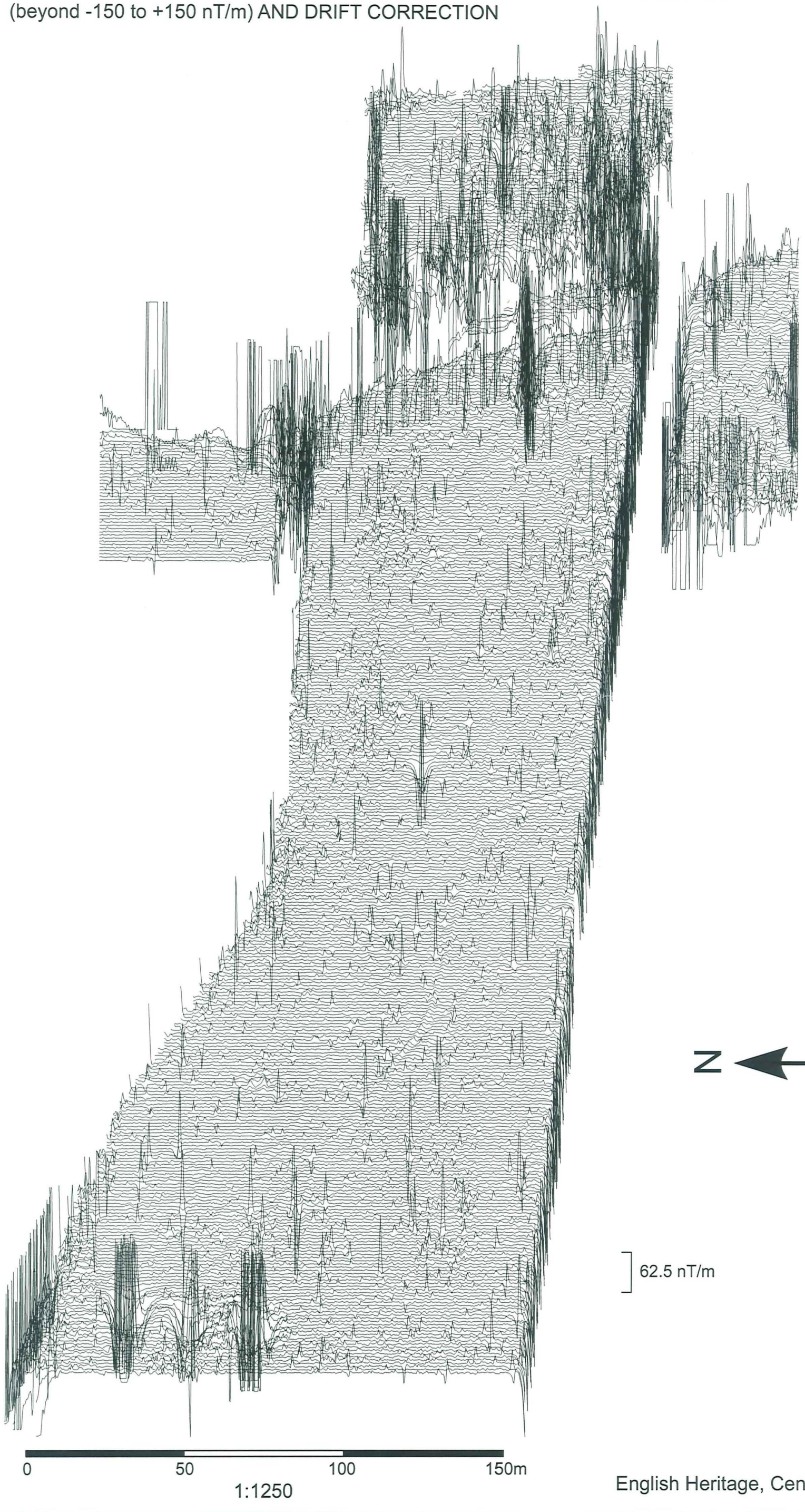

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FIGURE 4

DURRINGTON WALLS HENGE, WILTSHIRE Fluxgate Magnetometer Survey, April 2004

GREYSCALE PLOT OF DESPIKED MAGNETOMETER DATA

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FIGURE 5

DURRINGTON WALLS HENGE, WILTS Detailed high resolution magnetometer survey of the area between Durrington Walls and Woodhenge

GREYSCALE PLOT OF RANGE TRUNCATED (-150 - +150 nT/m) AND DRIFT CORRECTED DATA

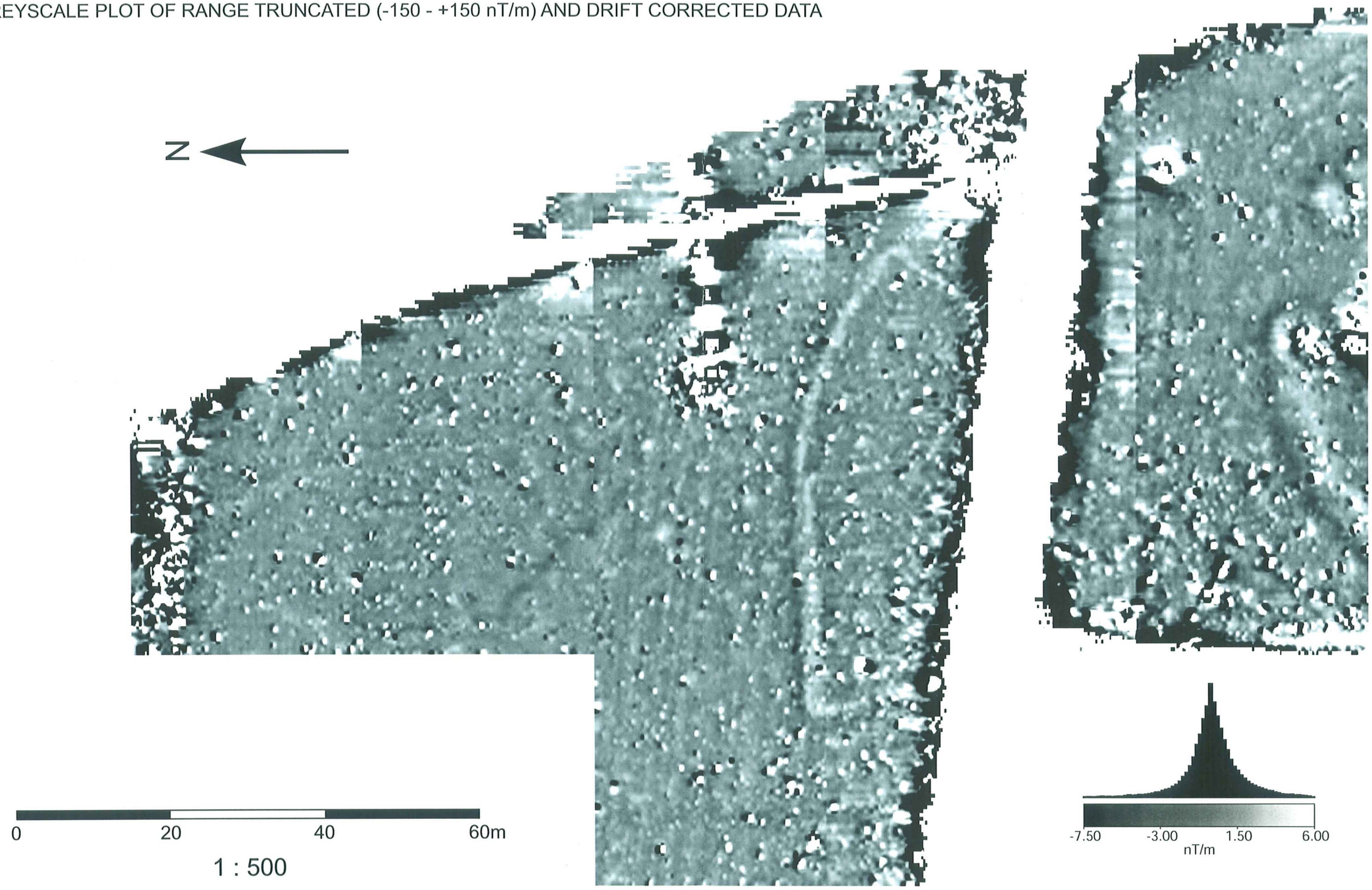


FIGURE 6

DURRINGTON WALLS HENGE, WILTS Detailed high resolution magnetometer survey of the area between Durrington Walls and Woodhenge

TRACEPLOT OF RANGE TRUNCATED DATA (-150 to +150 nT/m)

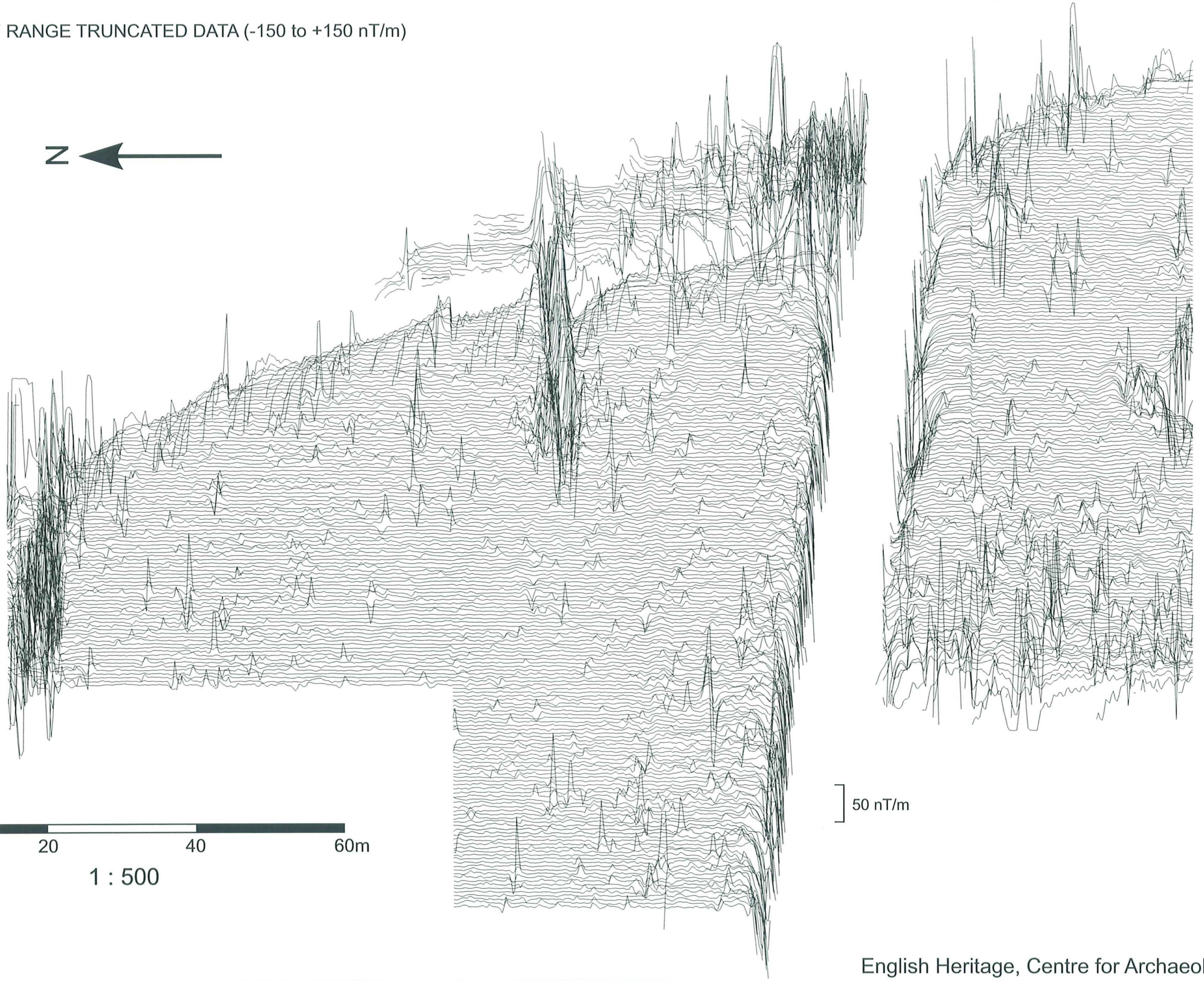
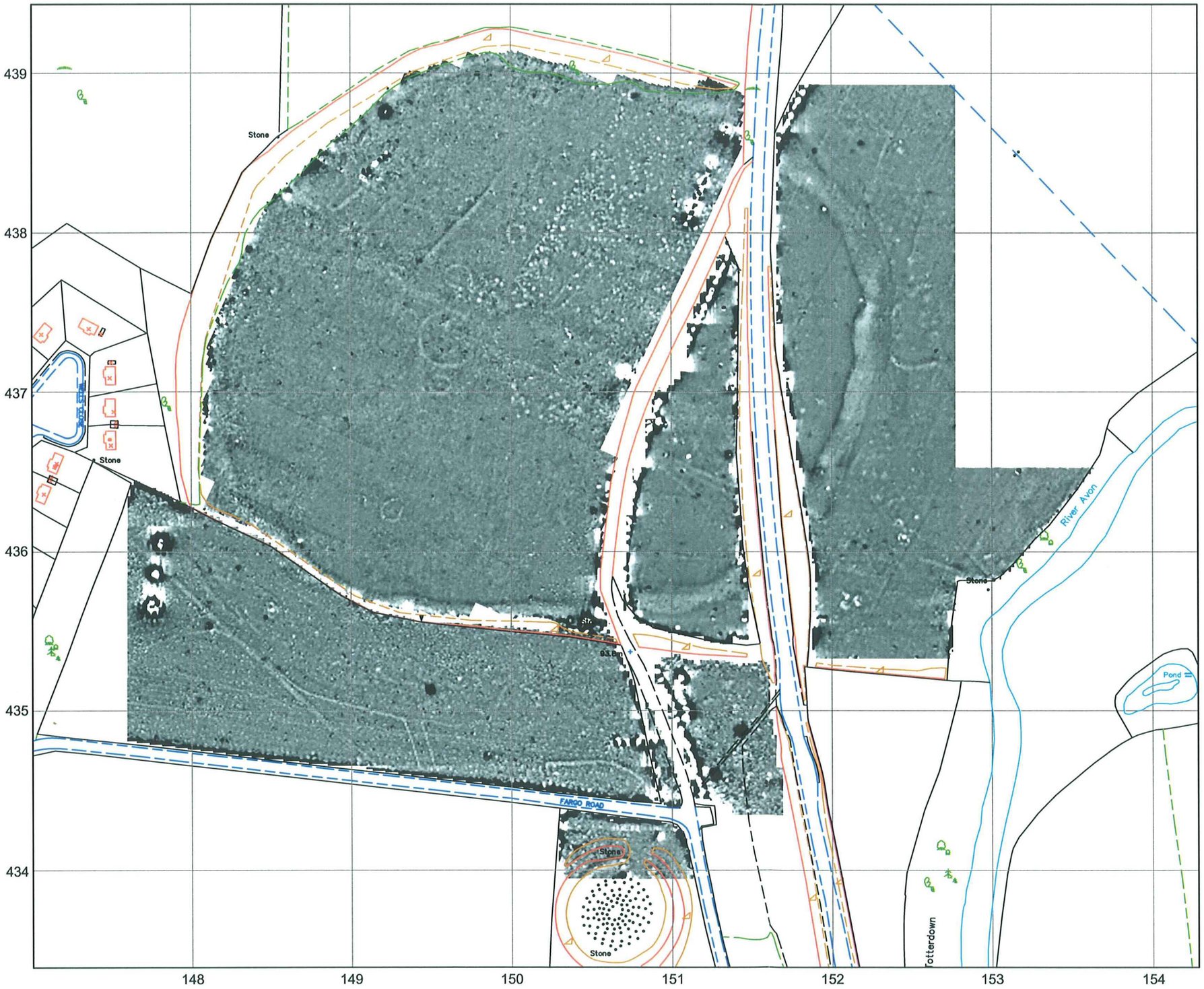


FIGURE 7

DURRINGTON WALLS HENGE, WILTSHIRE Location of Fluxgate Magnetometer Surveys 1996 - 2004



-5.00 -1.67 1.67 5.00

nT

SMOOTHED AND DESPIKED DATA

0 50 100 150m

1 : 2500

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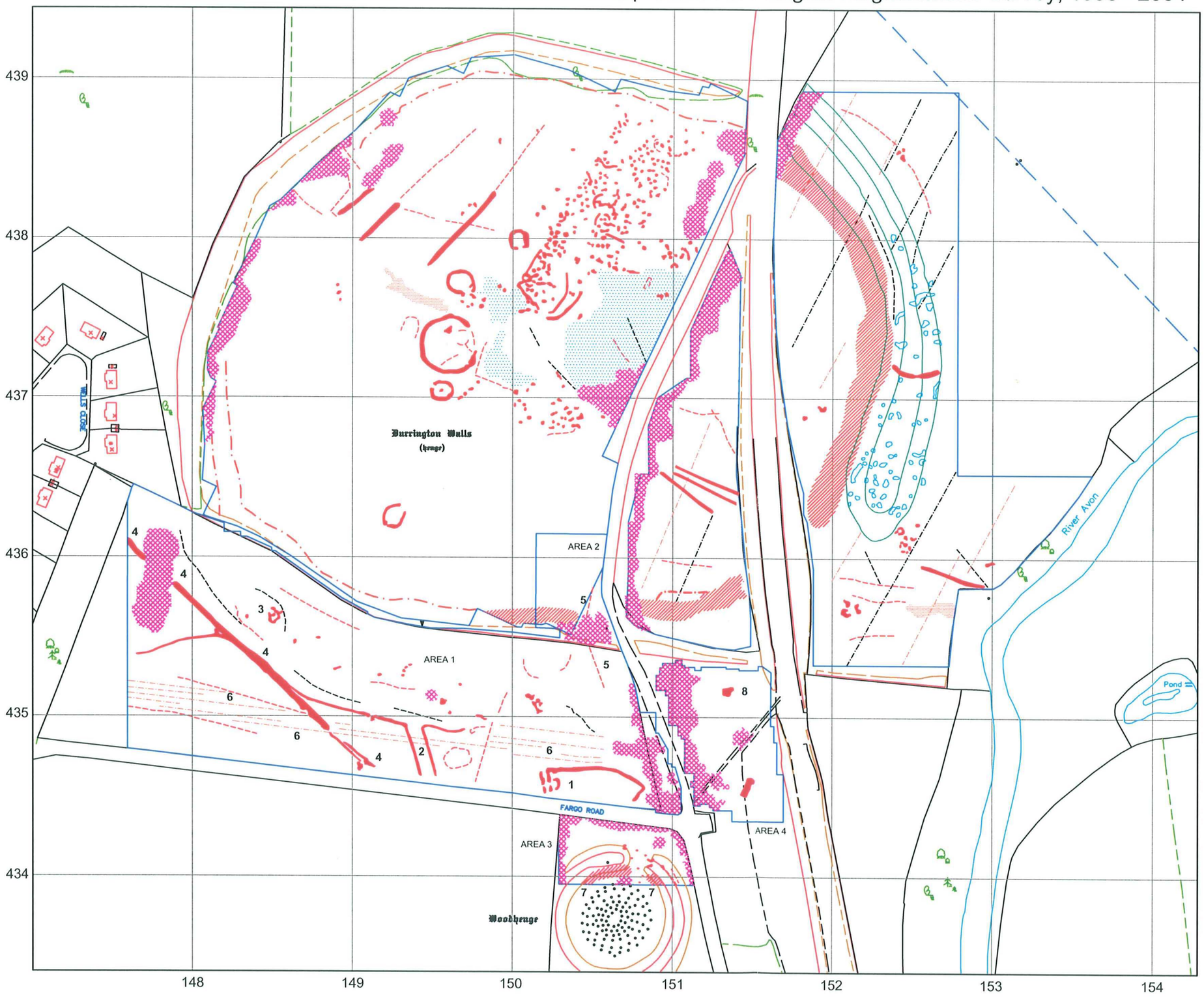
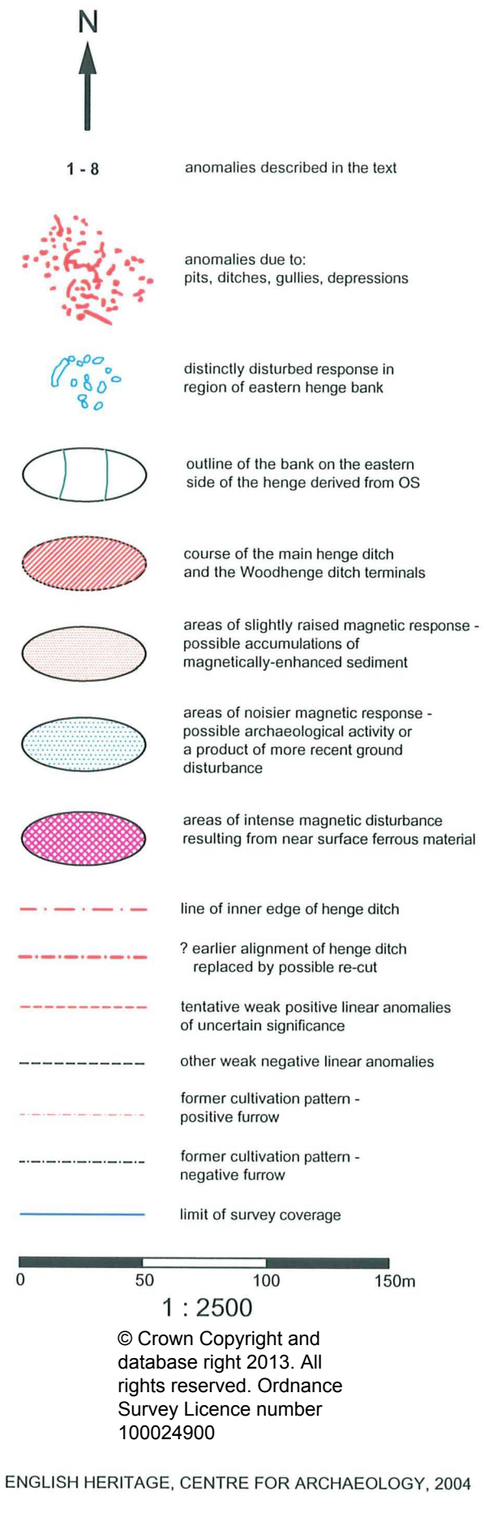
FIGURE 8

DURRINGTON WALLS HENGE, WILTSHIRE Detailed Interpretation of Fluxgate Magnetometer Survey, 1996 - 2004





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