GEOPHYSICAL SURVEYS
AT
GREAT DIXTER
NORTHIAM
EAST SUSSEX
TN31 6PH

NGR TQ 81963 25114

Great Dixter Biodiversity Audit

Report by
Kevin & Lynn Cornwell
Joint Field Officers
Hastings Area Archaeological Research Group

January 2019

Registered Charity No. 294989

Content

Figures

1.0 Introduction

The following report details the results of the geophysical surveys conducted at Great Dixter, Northiam, East Sussex (centred on TQ 81963 25114 - see Figures 1 & 2). The geophysical surveys formed part of a biodiversity audit supported by a Heritage Lottery Fund grant and took place over 8 days in November and December 2017.

2.0 Survey and Methodology

For the survey of areas M1-M5 (Labelled on Figure 3) the use of a fluxgate magnetometer was the preferred option. This would allow fast data collection within the grounds. More detailed surveys were conducted within the Great Dixter gardens (Labelled R1-R3 on Figure 3) and ground resistivity equipment was used in these areas due to likely contamination of the area with electric cables and metal artefacts.

Survey grids measuring 40 x 40m were laid out with respect to the field or garden boundaries to ensure the survey maximised the number of complete grids and minimised the number of partial grids. These were subdivided into 20 x 20m squares for the resistivity surveys.

2.1 Magnetometer Survey (Survey Codes M1-M5)

The magnetometer surveys were conducted using a Bartington Dual Sensor Grad 601-2 Fluxgate Magnetometer which consists of two high stability fluxgate gradiometers suspended on a single frame. Readings relate to the different localised magnetic anomalies compared with the local soils' magnetic background. Each gradiometer has a 1m separation between the sensing elements so enhancing the response to weak anomalies.

An important consideration when conducting a magnetometer survey is the locality of any fencing. Multi-stranded wire fencing can produce a large distortion in the local magnetic field so magnetic data should be collected at least 1m away from each strand of wire but the disturbance can usually be detected up to 5m away (Gaffney & Gater 2011, 81). When conducting a survey, a 5m 'exclusion zone' is maintained around the edge of the site.

The magnetometer was set to record 4 readings per meter transverse, surveying in a zig-zag pattern with the magnetometer set to a sensitivity of 0.03 nanoTeslas (nT). A balance station was set up on site in a 'metal free area' and the magnetometer was prepared for use at this point in accordance with the manufacturer's guidelines with regular re-zeroing at this point to prevent distortion of results.

2.2 Resistivity Surveys (Survey Codes R1-R3)

These surveys were conducted using a Geoscan RM15 Basic resistivity meter jointly owned by Sussex Archaeological Society (SAS) and East Sussex County Council (ESCC). The resistivity surveys were conducted with readings recorded at every 0.5m on 0.5m traverses in a zig-zag recording mode with the equipment set at 200 ohms.

2.3 Data Processing

All results were processed using Geoplot version 4.00 for Windows software package.

During the processing of the magnetometer data and to minimise any interference from surface scatters of modern ferrous materials and ceramics, the data was 'clipped and de-spiked' to remove any large 'peaks' or 'spikes'. This was followed by the 'zero mean grid' and 'zero mean traverses' functions being applied. Finally, the 'low pass filter' and 'interpolate' processes were used.

The initial inspection of the resistivity results highlighted a number of 'spikes' and these were removed prior to the grid 'edge matching' process being applied. Finally, 'high and low pass filters' were used with the 'interpolate' option.

3.0 Results and Interpretation

To assist with the interpretation of the results, this section of the report has been sub-divided into survey areas and the geophysical survey method utilised.

3.1 Magnetometer Results and Interpretation

The magnetometer survey results can be seen at Figures 4 & 6 with the graphic interpretations at Figures 5 & 6.

3.1.1 Bottom Meadow (centred on NGR TQ 81746 25495) - Survey Code M1 (see Figures 4 & 5) – Survey Dates 9 & 16 December 2017.

Anomalies identified on the magnetometer (Figure 4) have been labelled on the graphic interpretation seen at Figure 5.

'A' is a short section of ditch running in a south-south-east to north-north-west direction and extends for approximately 25m. This may represent a drainage ditch but it does not obviously connect to any features other than the northern hedge line of the field.

'B' is a linear feature aligned NE-SW. It does not feature as a boundary on the c.1840 Tithe map (ESCC website 2018 – Northiam TD/E96) or later maps however it runs parallel approximately 30m to the north of feature 'C' for the length of the field. It may represent a trackway from the woodland to the southwest of this field. There has been quarrying in this woodland area evidenced by quarry pits.

'C' is the old hedge line as indicated on the historical maps including the c.1840 Northiam Tithe map (ESCC website 2018 – Northiam TD/E96).

'D' is an oval-shaped area of higher magnetic response. This feature is suggestive of a backfilled pond approximately 10m x 6m in size.

3.1.2 Lower Paddock (centred on NGR TQ 81789 25057) - Survey Code M2 (see Figures 4 & 5) – Survey Date 16 December 2017.

'E' is an area of magnetic disturbance probably caused by the roofing and debris from the sheds in the corner of the field.

3.1.3 Paddock (centred on NGR TQ 81842 25095) - Survey Code M3 (see Figures 4 & 5) – Survey Date 16 December 2017.

No archaeological features identified however there is a high level of disturbance likely to be modern in date as the field is used as an overflow car park. This type of magnetic disturbance has been identified by Historic England (formerly English Heritage) on other heritage sites.

3.1.4 New Meadow (centred on NGR TQ 81908 24974) - Survey Code M4 (see Figure 6) – Survey Date 16 December 2017.

Labelled 'G' is of unknown date although its position just inside of a gateway suggests modern hardcore being deposited to make firm ground.

3.1.5 Prairie (centred on NGR TQ 82083 25102) - Survey Code M5 (see Figure 6) – Survey Date 24 December 2017.

The magnetometer results have highlighted a series of pipelines (coloured red and labelled 'H'-'J'). These show up as strong regular linear features with a pattern of increasing and decreasing magnetic responses (Geoplot Manual 5-26 and Gaffney & Gater 2011). Pipe 'I' has a manhole cover in the centre of the survey area and has been depicted as a red square.

3.2 Resistivity Results and Interpretation

The resistivity survey results can be seen at Figures 7 & 9 with the graphic interpretations at Figures 8 & 9. The results interpretation has used the following colours and symbols to illustrate the garden features in relation to the survey findings. See below legend:

Tree.

Tree bowl – identified as white (low resistance) areas on the results.

Furrows – linear ditch (seen as decreased resistance).

Paths – not surveyed and identified as white linear features on the resistivity results.

3.2.1 Topiary Lawn (centred on NGR TQ 81918 25111) - Survey Code R1 (see Figures 7 & 8) – Survey Date 21 November 2017.

The high resistance features labelled 'K' are suggestive of being the footprint or remains of the foundations of previous buildings.

3.2.2 The Orchard (centred on NGR TQ 81969 25056) - Survey Code R2 (see Figures 7 & 8) – Survey Dates 11, 12, 18, 19 & 21 November 2017.

'L' indicates features suggestive of demolished buildings, probably of timber framed construction with post holes clearly identified to the east of the 'walls'.

'M' indicates the remains of a wall approximately 5m in length.

3.2.3 Front Meadow (centred on NGR TQ 81989 25140) - Survey Code R3 (see Figure 9) – Survey Dates 5 & 11 November 2017.

'N' and 'O' are anomalies that run parallel to each other 5.5m apart. It has been suggested that these are the walls of a small possibly medieval building which pre-dates the present house (pers. comm. David Martin).

'P' is suggestive of a floor or hard standing within the building.

'Q' is a curved ditch showing as reduced resistance (lighter curved linear feature) of unknown date.

4.0 Discussion

The magnetometer surveys were only possible to conduct in the more open and larger spaces due to the presence of modern building materials and fencing. The results demonstrated old hedge lines and a possible trackway in the fields south-west of Great Dixter house.

The resistivity surveys are more detailed and very time consuming so have been conducted in the smaller areas and close to the house and garden features.

The identification of a building to the front of the present Great Dixter house is suggestive of an earlier house or farm building on the site. Buildings to the rear of the house (to the south-west and west) are suggestive of demolished agricultural buildings. These may have been demolished as part of the landscaping of the estate.

There are no features to suggest that the upper and lower moats were once joined.

Sources Consulted

Gaffney, C. & J. Gater. 2011. *Revealing the buried past geophysics for Archaeologists.* Brimscombe Port Stroud, Gloucestershire: The History Press.
Geoplot v4 for Windows Instruction Manual, on Line, Geoscan Research, Bradford, West Yorkshire.

Website Consulted:

The Chartered Institute for Archaeologists incorporated by Royal Charter, Reading. Standard and guidance for archaeological geophysical survey – published December 2014. https://www.archaeologists.net/sites/default/files/CIfAS&GGeophysics_1.pdf [accessed 19 January 2019].

ESCC - Northiam – Maps and Tithe award schedules dated c.1840 TD/E96 - [accessed 15 October 2018].
National Grid Reference Finder – www.gridreferencefinder.com [accessed 15 October 2018].

Acknowledgements

The author would like to thank the following people for their assistance in this project:

Victoria Williams, Project/Administrative Director, Great Dixter Charitable Trust for organising the project and allowing access to the site.
Nicola Bannister, Freelance Landscape Archaeologist for her support with the report.
Sussex Archaeological Society and East Sussex County Council for the loan of the RM15 resistivity equipment.
David and Barbara Martin, Historic Buildings Consultants.
Richard Axe, Roy Dunmall, Martyn Ellis, Mick Hide, John Platt and Bob Washington, members of Hastings Area Archaeological Research Group who assisted in the field.

Figure 1 – Great Dixter (highlighted by the red pin on Google map) in relation to Northiam, Royal Tunbridge Wells and Hastings.

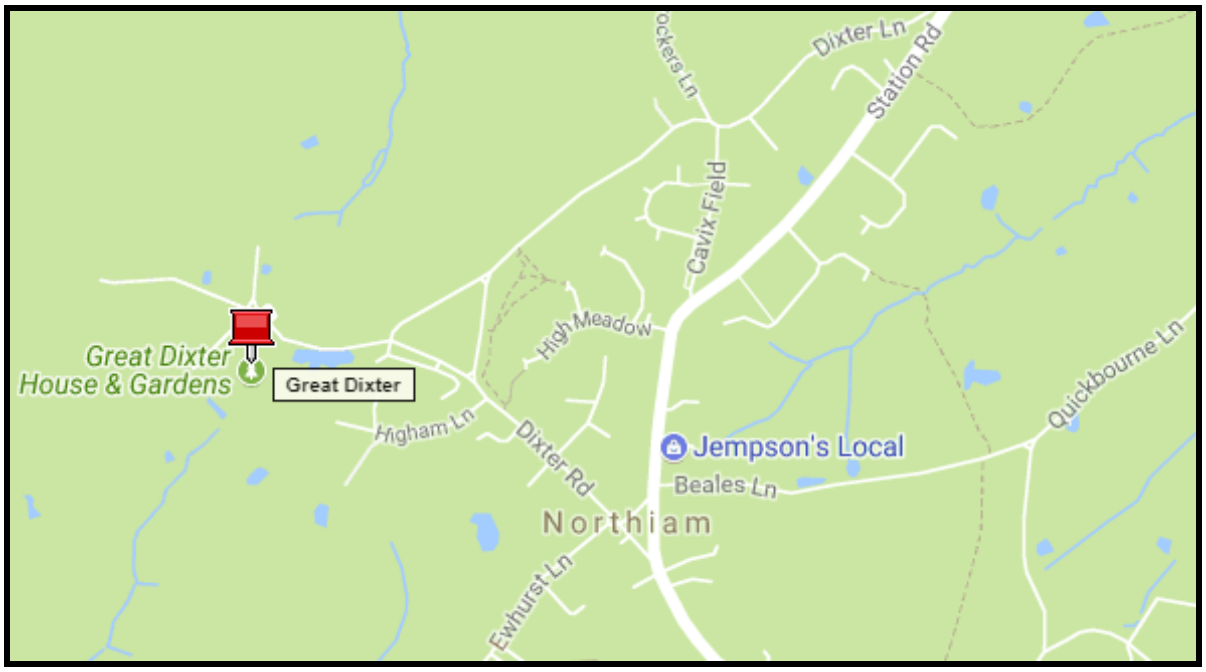

Figure 2 - Great Dixter (highlighted by the red pin on Google map) in relation to Dixter Lane, Dixter Road and the village of Northiam.

Figure 3 – Geophysical survey areas of Great Dixter, Northiam, East Sussex.

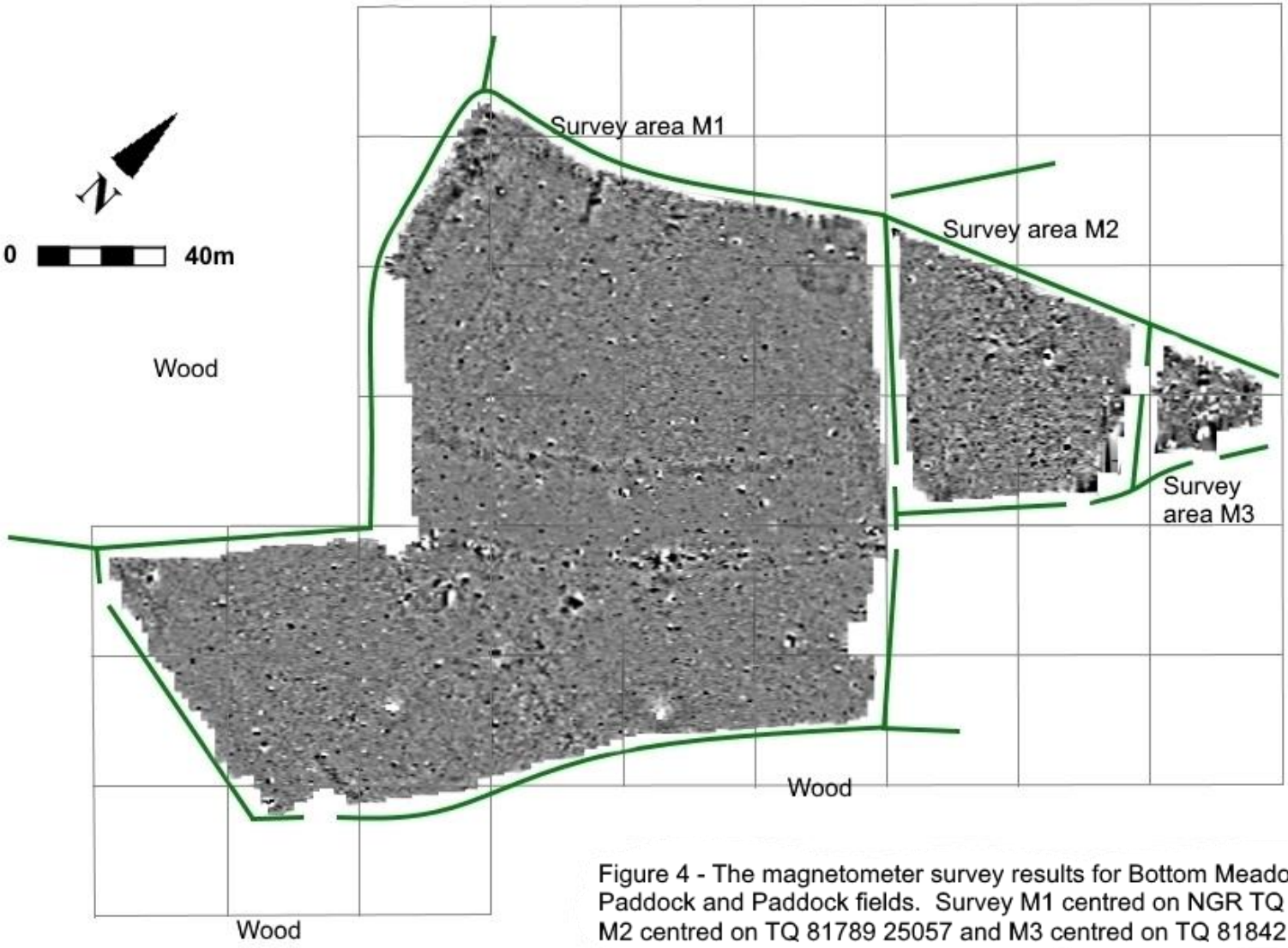

Figure 4 - The magnetometer survey results for Bottom Meadow, Lower Paddock and Paddock fields. Survey M1 centred on NGR TQ 81746 25495, M2 centred on TQ 81789 25057 and M3 centred on TQ 81842 25095.

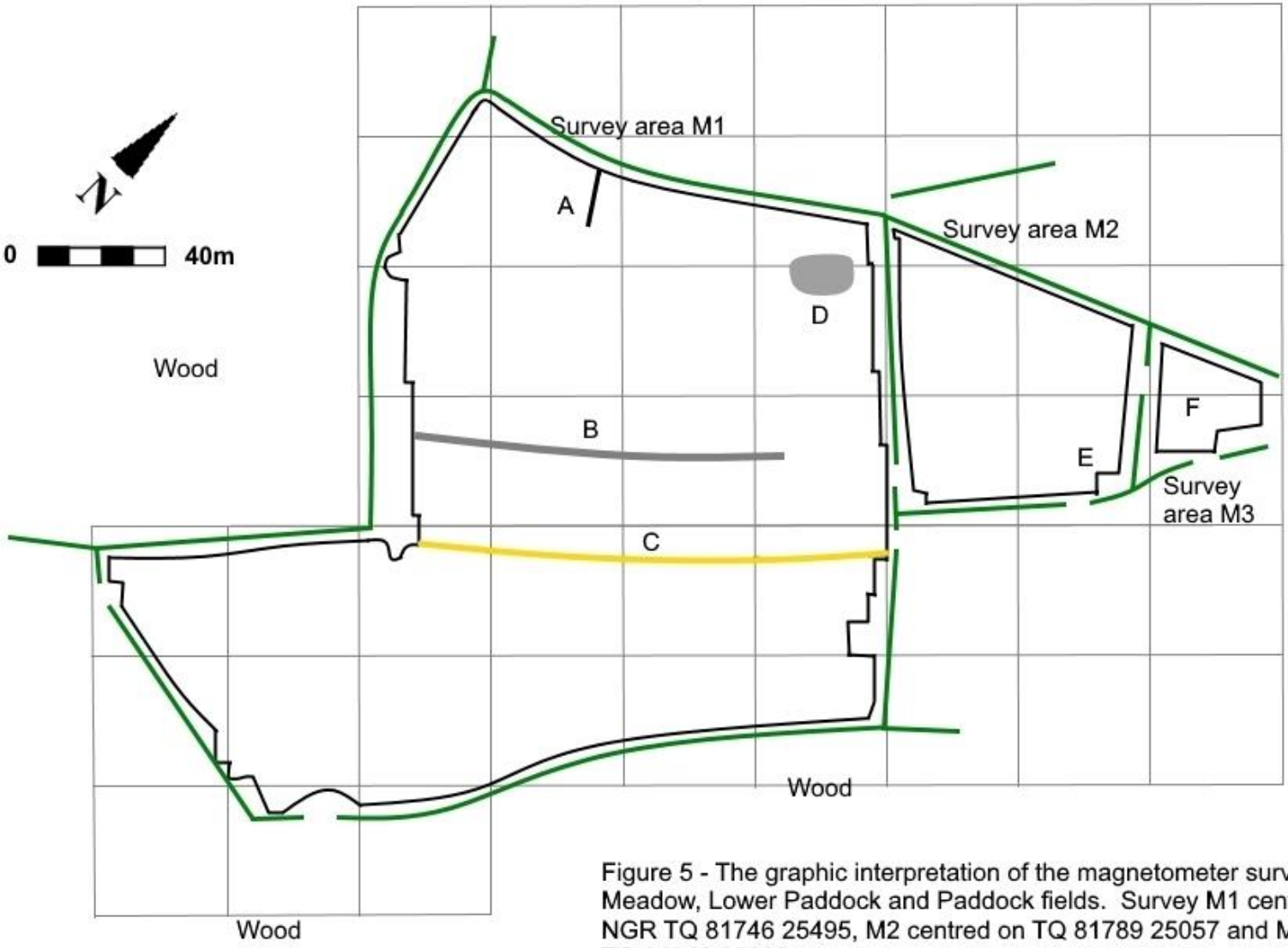

Figure 5 - The graphic interpretation of the magnetometer surveys of Bottom Meadow, Lower Paddock and Paddock fields. Survey M1 centred on NGR TQ 81746 25495, M2 centred on TQ 81789 25057 and M3 centred on TQ 81842 25095.

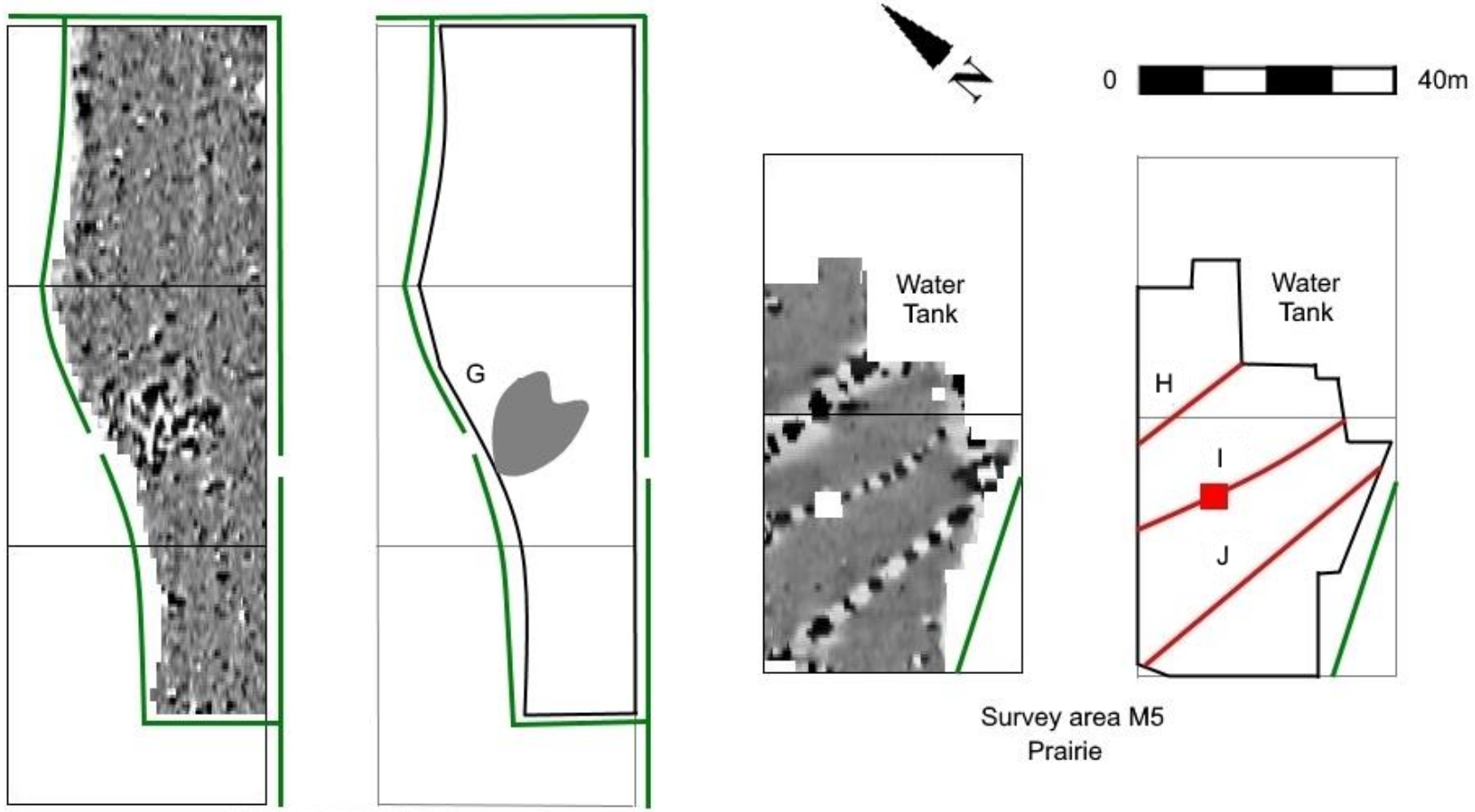

Figure 6 - The magnetometer survey results plus graphic interpretation for survey areas M4 and M5. M4 centred on NGR TQ 81908 24974 and M5 centred on TQ 82083 25102.

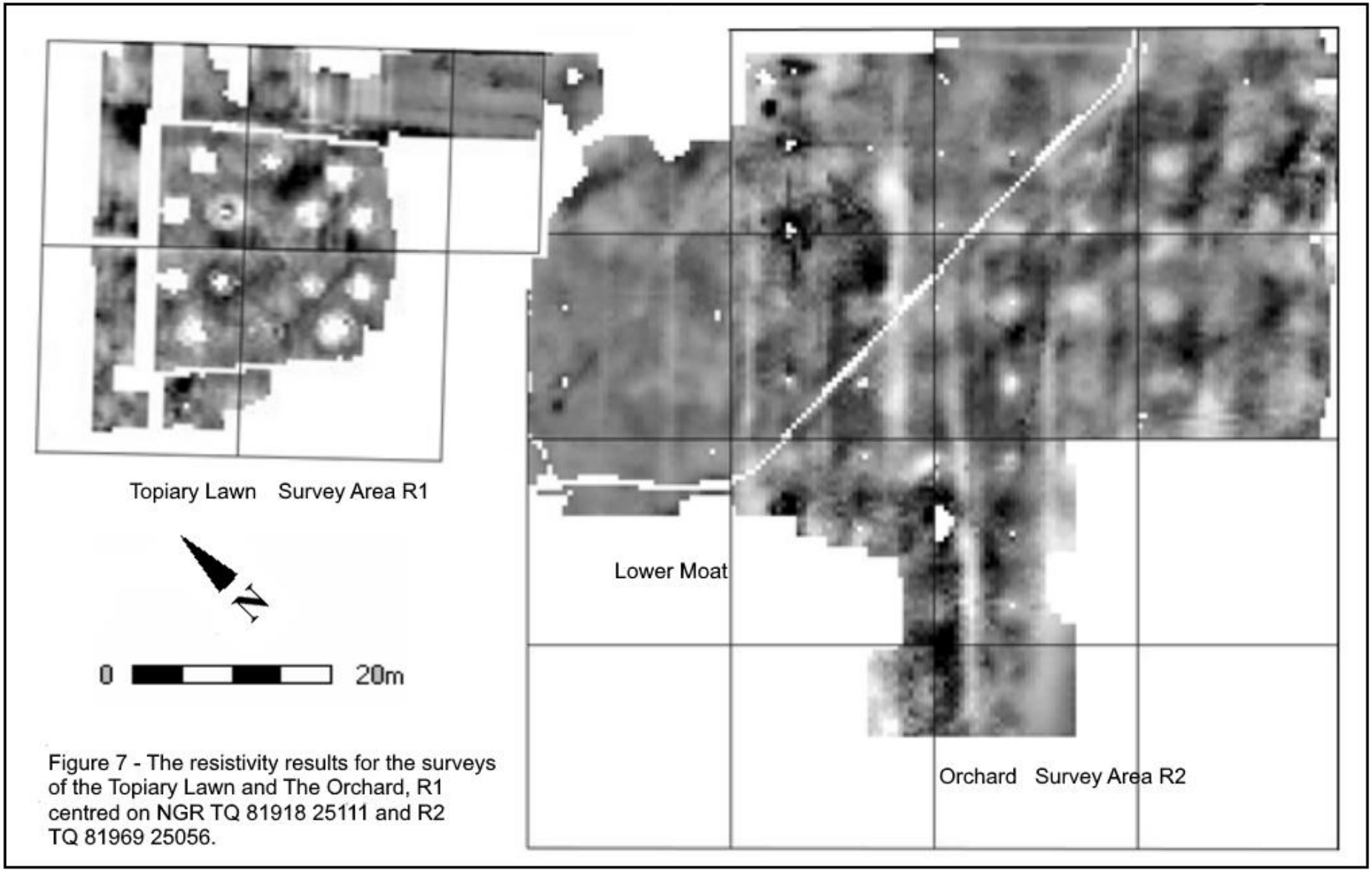

Figure 7 - The resistivity results for the surveys of the Topiary Lawn and The Orchard, R1 centred on NGR TQ 81918 25111 and R2 TQ 81969 25056.

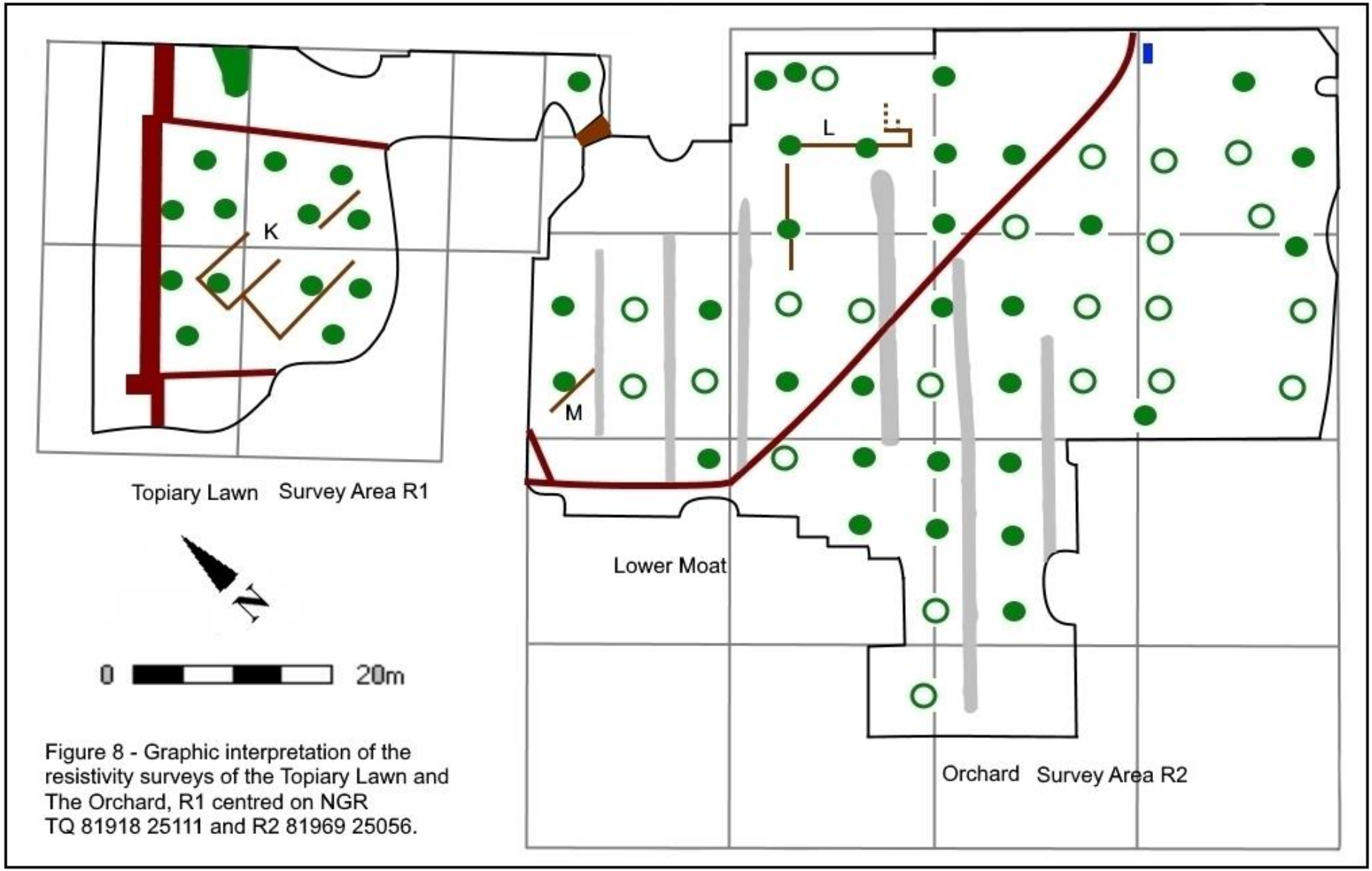

Figure 8 - Graphic interpretation of the resistivity surveys of the Topiary Lawn and The Orchard, R1 centred on NGR TQ 81918 25111 and R2 81969 25056.

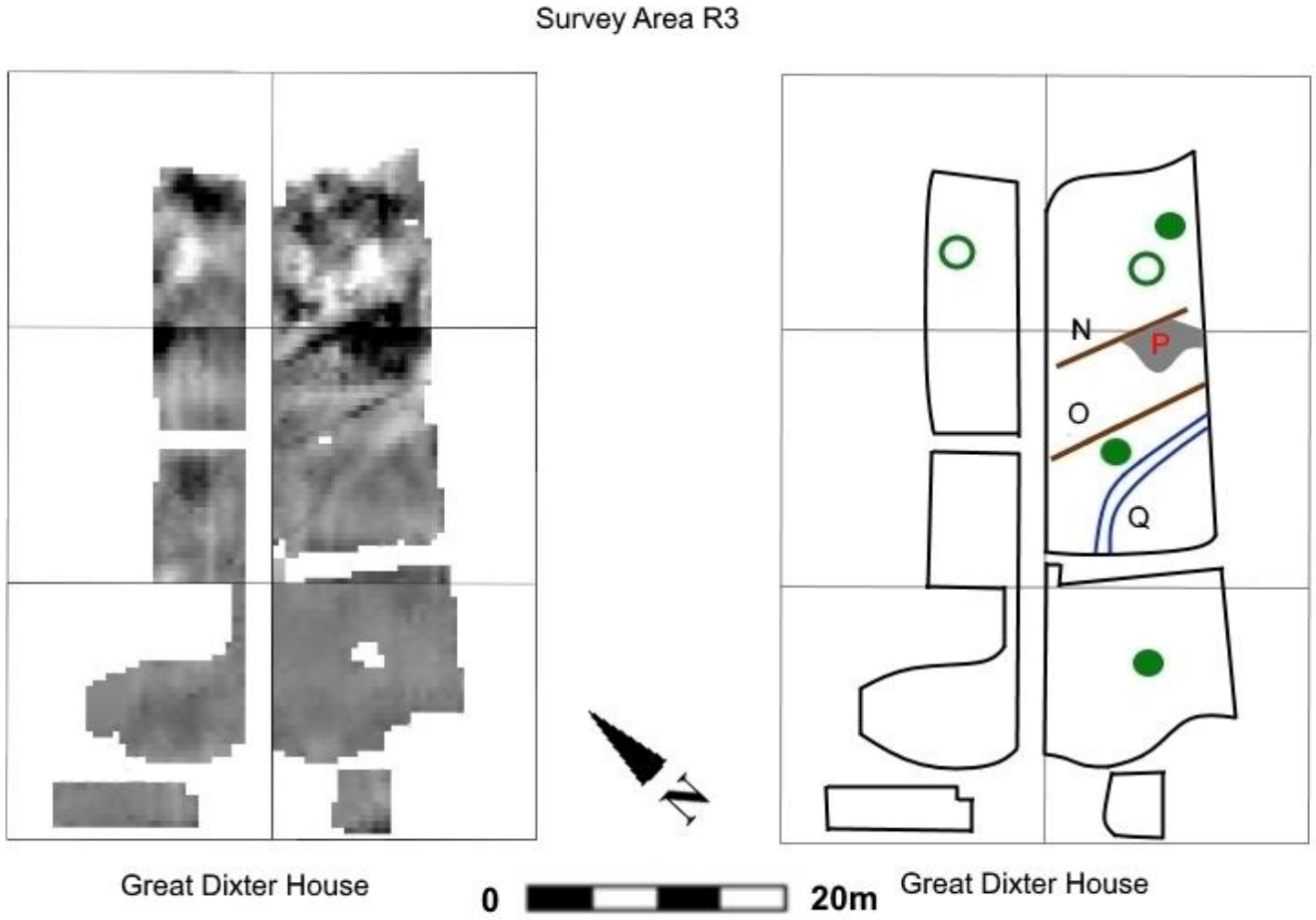

Figure 9 - The resistivity survey results plus graphic interpretation of the Front Meadow survey, centred on NGR TQ 81989 25140.