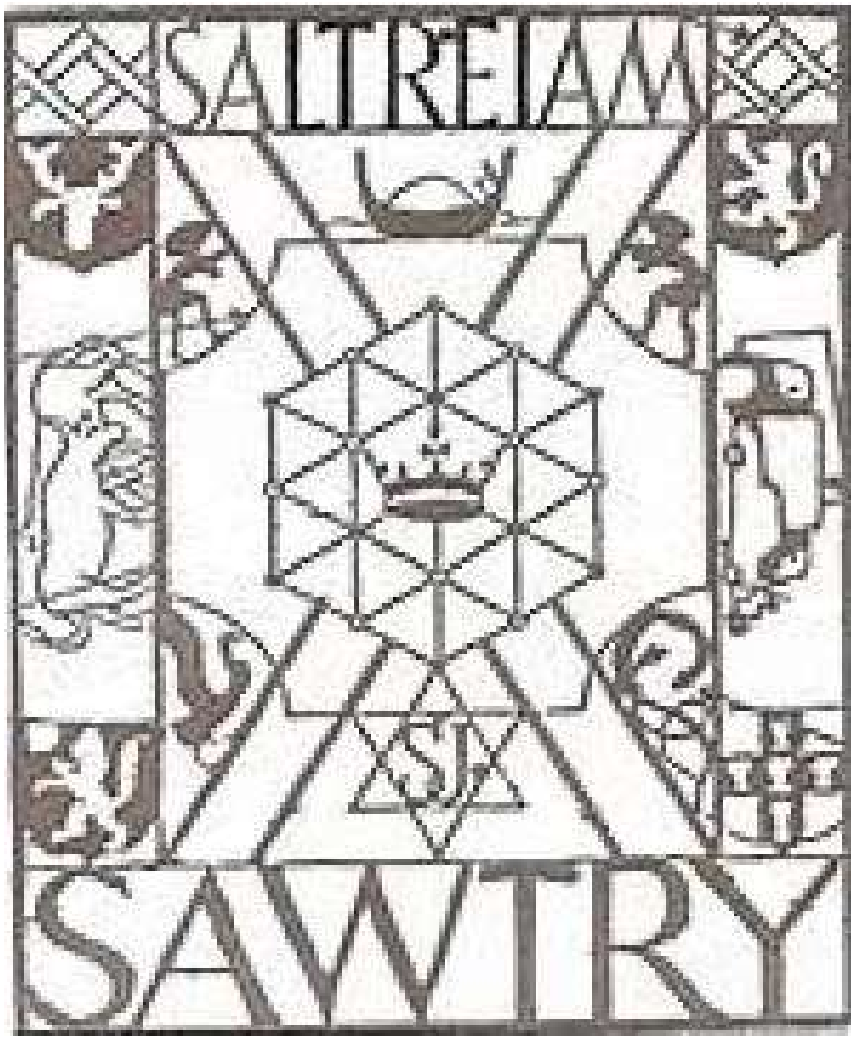
SAWTRY HISTORY SOCIETY



ARCHAEOLOGICAL GEOPHYSICAL SURVEY INTERIM REPORT
SHS 17-1/IR-11

GEOPHYSICAL EARTH RESISTANCE SURVEY (19 - 21 FEB 22) - HILL TOP, ALCONBURY WESTON

31 January 2024

by

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& Phil Hill BA(Hons), PCIfA

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TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

ACKNOWLEDGEMENTS

SHS gratefully acknowledges the help and assistance of the following:

Kay Chapman	Landowner
John Steele	Tenant Farmer
Philip Smith	Landowners Historical Research Group (LHRG)

Participating volunteers

OASIS REPORT FORM

PROJECT DETAILS	**OASIS No:**	
Project name	Geophysical earth resistance survey of Long Nines field in Alconbury Weston	
Short description	An earth resistance survey (Res171-6) was undertaken over the northeast of Long Nines field in order to determine whether any of the archaeological anomalies identified in Hill Top by Res171-5 continued into Long Nines.	
Project type	Geophysical survey	
Site status	N/A	
Previous work	1. Desk-top research into previous archaeological investigations undertaken by local and commercial archaeologists prior to 2009. 2. Desk-top analysis of the results of metal detecting undertaken by the Landowners Historical Research Group (LHRG) from 2009 to 2018. 3. Geophysical magnetometry survey, 24 Feb 17. 4. Geophysical earth resistance survey, 7-8 May 17. 5. Field walking survey undertaken over two sessions, 30 Sep and 6 Oct 17. 6. Geophysical earth resistance survey, 14 May 18. 7. Evaluation excavation undertaken over four sessions over the period 30 Oct 18 - 18 Feb 19. 8. Evaluation excavation undertaken, 22 Feb - 8 Mar 20. 9. Geophysical earth resistance survey, 5 - 8 Mar 20. 10. Geophysical earth resistance survey at 0.25m sampling, geophysical earth resistance survey at 1m sampling and geophysical magnetometry survey, 10 - 18 Apr 21.	
Current land use	Arable farming	
Future work	Geophysical survey and excavation	
Monument type / period	Iron-Age/Romano-British, *circa* 100 BC to AD 410	
Significant finds	N/A	
PROJECT LOCATION		
County	Cambridgeshire	
Site address	Hill Top, Alconbury Weston	
Study area	Res171-6 - 0m^2 (0.0ha)	
OS grid reference	TL18374 77628	
Height OD	48m	
PROJECT CREATORS		
Organisation	Sawtry History Society	
Project brief originator	Sawtry History Society	
Project design originator	N/A	
Director/Supervisor	Phil Hill	
Project Manager	Kevin Redgate	
Sponsor or funding body	Sawtry History Society	
PROJECT DATE		
Start date	19 Feb 22	
End date	21 Feb 22	
ARCHIVES	Location	Content
Physical		
Paper		
Digital	SHS Archaeological Digital Archive	SHS Archaeological Digital Records and Media
BIBLIOGRAPHY		
Title	Geophysical Earth Resistance Survey (19 - 21 Feb 22) - Hill Top, Alconbury Weston	

Serial title & volume	N/A
Author(s)	Kevin Redgate & Phil Hill
Page numbers	9, plus 3 Annexes and 1 Enclosure
Date	31 January 2024

1. **Introduction**.

1.1. Hill Top has provided tantalizing evidence of a potentially significant Romano-British settlement through the antiquarian investigations of Dr J R Garrood MD in the 1932, and the developer led commercial archaeological evaluations of the both the Archaeology Section of Cambridgeshire County Council (CCCAFU) and Birmingham University Field Archaeology Unit (BUFAU) 1990s. This evidence has been significantly reinforced, not just by the quantity of coins and metal artefacts detected during the period 2009 to 2018, but by the presence of numerous artefacts of high status and significance within the metal finds assemblage, by the finds recovered during the earlier field walking survey and by previous geophysical magnetometry and earth resistance surveys.

1.2. The survey consisted of an earth resistance survey during the period 19 - 21 Feb 22, the purpose of which was to determine whether any of the archaeological anomalies identified in Hill Top by Res171-5 continued into Long Nines.

2. **Site Details**.

2.1. **Event Number**. ECB5117.

2.2. **Location**. The site consists of Hill Top field and Long Nines field to the south-east. It is located west of the A1 and east of Vinegar Hill in the centre of Alconbury Weston Civil Parish (Figure 2.1), and centrally in the northern half of National Grid Reference (NGR) square TL1877 (Figures 2.2 and 2.3).

Figure 2.1: Site relative to Alconbury Weston (Google Earth, 2016)

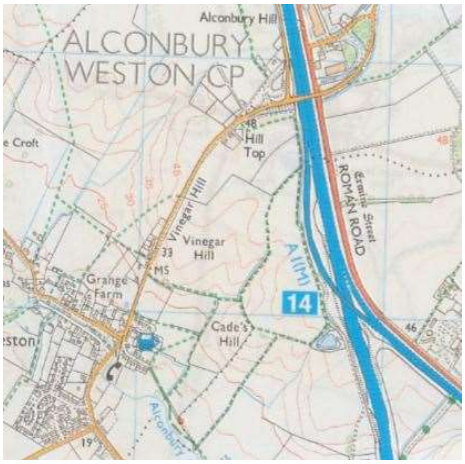

Figure 2.2: Site relative to Alconbury Weston (Ordnance Survey, 2006)

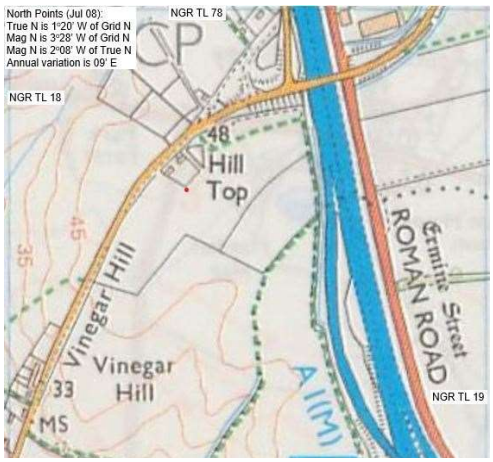

Figure 2.3: Hill Top site with SBM (red dot) (Ordnance Survey, 2006)

2.3. **Site Benchmark (SBM)**. This has been set on the edge of the tree line adjacent to the south corner of the residential gardens at NGR TL 18374 77628, as shown by the red dot (Figure 2.3).

2.4. **Site Grid**. The site grid can be found at Annex A.

2.5. **Geology**. The site sits on the west edge of a plateau on the 45m contour that overlooks the Alconburys. The bedrock is Oxford Clay Formation-Mudstone with Oadby Member-Diamicton superficial deposits, above which are varying depths of plough-soil (Figure 2.4).

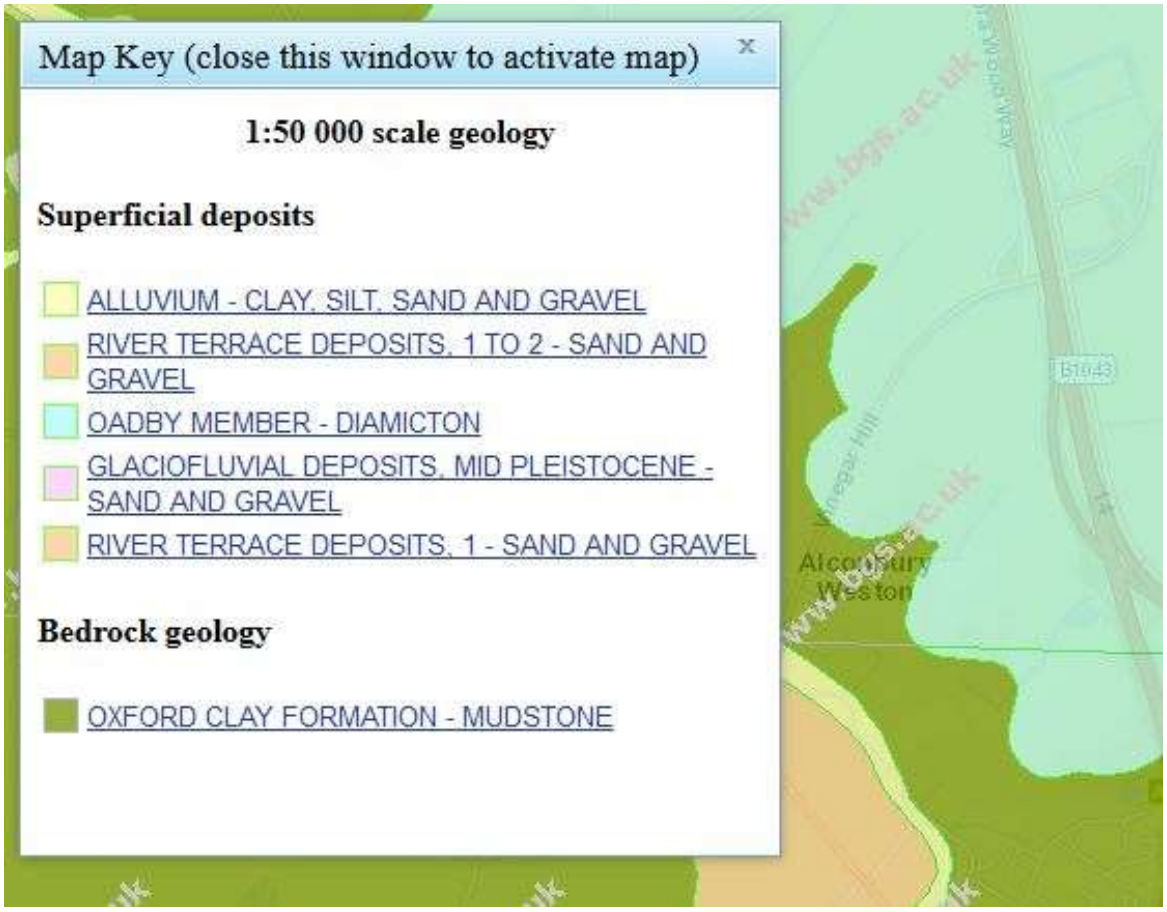

Figure 2.4: Site geology (British Geological Survey, 2017)

2.5.1. **Oxford Clay Formation-Mudstone**. A sedimentary bedrock formed approximately 157 to 166 million years ago in the Jurassic Period where the local environment was previously dominated by shallow seas. These sedimentary rocks are shallow-marine in origin and are detrital, ranging from coarse- to fine-grained (locally with some carbonate content) forming interbedded sequences.

2.5.2. **Oadby Member-Diamicton**. Superficial Deposits formed up to 2 million years ago in the Quaternary Period where the local environment was previously dominated by ice age conditions. These sedimentary deposits are glacigenic in origin and are detrital, created by the action of ice and meltwater - they can form a wide range of deposits and geomorphologies associated with glacial and inter-glacial periods during the Quaternary.

2.6. **Protection**. The site is not protected or within a conservation area.

2.7. **Land Use**. The two fields that comprise the site were used for arable farming and, as such, subjected to modern farming methods including ploughing and harrowing for crops,

and deeper mole ploughing for drainage. From early 2018, the site was held as grassland for hay and sileage. In 2021 the land was placed on the market for sale. Following the final grass harvest and prior to relinquishing of the tenancy, the site was manured with straw that was heavily contaminated with farm detritus (that included bailing twine, stones and metal sherds) and subsequently left untendered and abandoned to scrub. Sale of the land was completed in January 2023; the new landowner's intended use of the land is unknown.

2.8. **Utilities**. An active branch of the ex-government fuel oil pipeline (now under private ownership) runs through the west end of the site, whilst a medium pressure gas pipeline runs through the site on a north/south alignment west of the Hill Top cottages. There is also a short low voltage (230V/480V) supply line serving the new barn in the berm enclosure and a low voltage supply line to the north of Hill Top Cottages that serves a sewage kiosk; suggesting that there is an underground sewage tank at the northeast of Hill Top Cottages (see Figure 2.5).

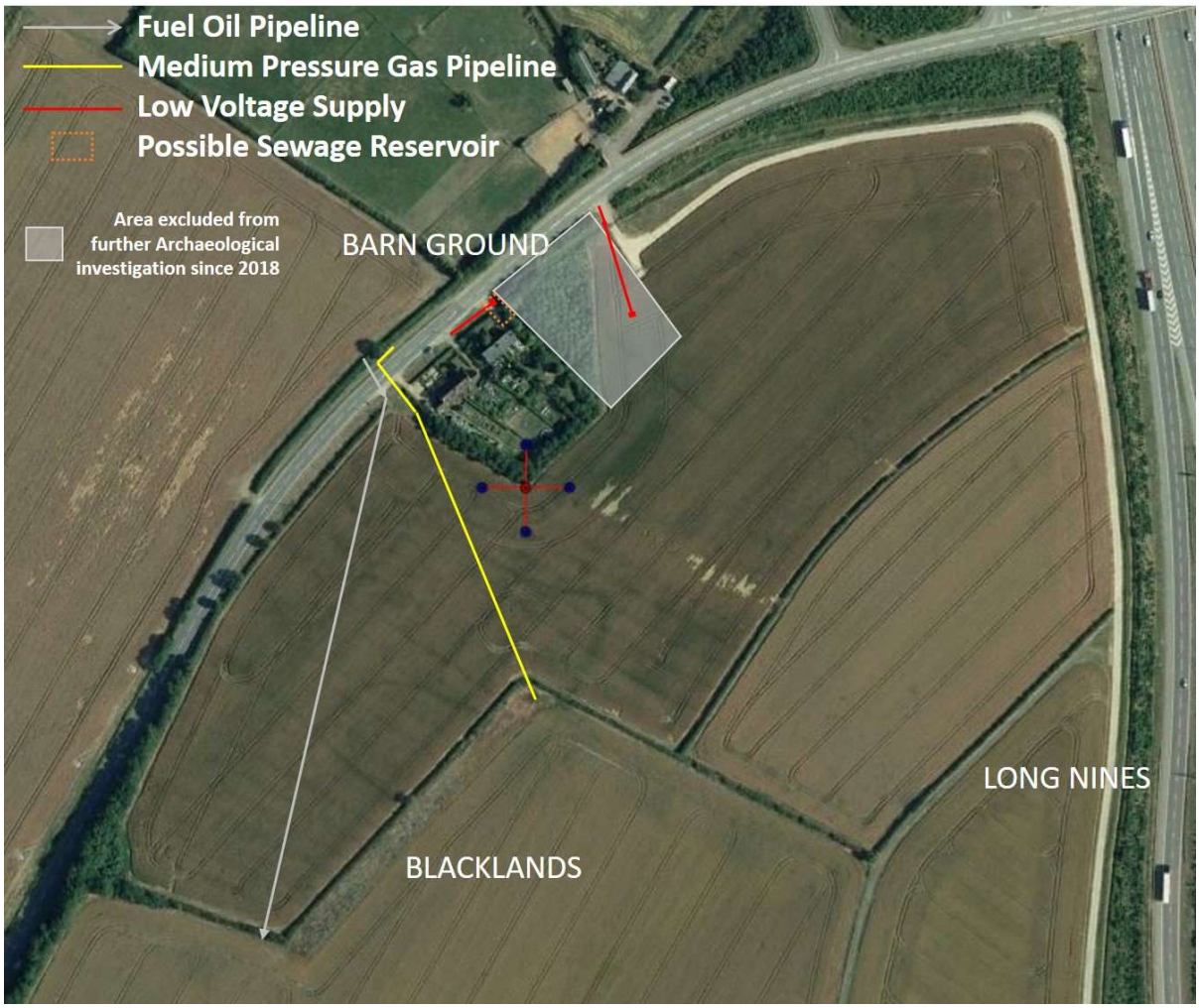

Figure 2.5: Utilities (Google Earth, 2016)

2.9. **Historical Background**. In 1932 Dr J R Garood MD, a local antiquarian of the Cambridgeshire & Huntingdonshire Archaeological Society (CHAS), began investigating the fields of Blacklands and Barn Ground (the previous field names of the field now known as Hill Top) as part of a wider investigation of Iron Age and Roman-British settlement sites on Alconbury Hill. Further archaeological investigations were undertaken by the Archaeology Field Unit of Cambridgeshire County Council (CCCAFU) in 1991, 1992 and 1995 in advance of A1 widening. Archaeological investigations were also carried out by Birmingham University Field Archaeology Unit (BUFAU) in 1996 also in advance of A1 widening. Since 2009 the two fields of the site have undergone methodical metal detecting which has produced a considerable volume of Roman artefacts ranging from coins to high status jewellery spanning four centuries of Roman occupation. Incidental to the metal finds was a

wealth of ceramic artefacts including pot sherds, Ceramic Building Material (CBM) and *tesserae*. Sawtry Archaeology, under the auspice of Sawtry History Society, has undertaken periodic, and ongoing, archaeological investigations since 2017.

3. **Methods**.

3.1. **Survey Area**. The survey area consisting of twelve squares was established from the site grid as shown at Figure 3.1.

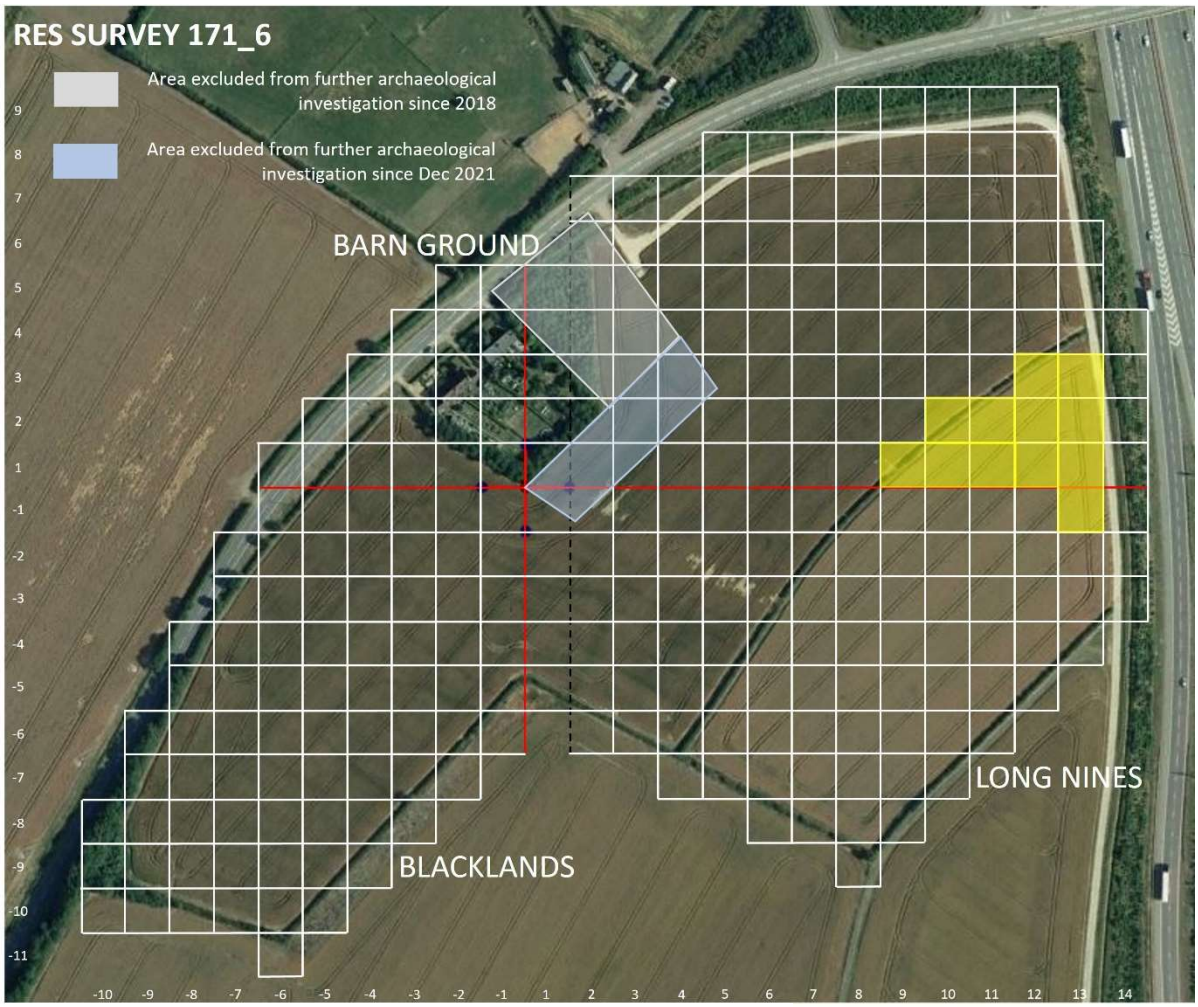

Figure 3.1: Site grid with Res 171_6 survey area highlighted (Google Earth, 2016)

3.2 **Earth Resistance Survey**. The survey was carried out using the Geoscan Research RM85 Resistance Meter System and PA20 Probe Array assembly. Each survey square consisted of twenty traverse lines with readings being taken at one metre intervals along each traverse. The survey started in the southwest square of the survey area, traverses in each survey square started in the SW corner and followed a north-south zig-zag pattern to end in the SE corner. The Survey Record Sheet is at Annex B.

4. **Results**. Survey data was imported into Snuffler (version 1.21) as a single data set. The data plots presented in Figures 4.1 to 4.5 are presented in the default linear display option and greyscale display type; other display options and types are provided at Annex C:

black = low resistance; pits, ditches, clay dumps
white = high resistance; walls, rubble, paving areas
red = areas not surveyed
linear = display colour blocks are assigned to equal ranges of values
non-linear = display colour blocks are assigned to equal numbers of readings
relief plot = displays results as a 3D image

- high resistance readings are high points
- low resistance readings are low points

4.1. **Raw Data Plots**. Raw data plots are provided in pairs; the first plot without grid lines in order to present an uninterrupted picture, the second plot with grid lines in order to aid with orientation (Figure 4.1).


Figure 4.1a: Raw data

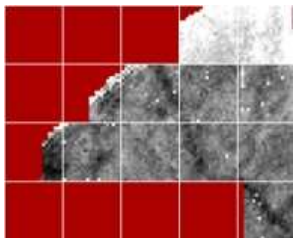
Figure 4.1b: Raw data

4.2. **Corrected Data Plots**. Corrected data plots are provided in pairs; the first plot without grid lines in order to present an uninterrupted picture, the second plot with grid lines in order to aid with orientation. Correction to the raw data was applied in two stages, firstly through the application of clip, de-spike and edge correction (Figure 4.2) and secondly through the further application of sharpen (Figure 4.3).

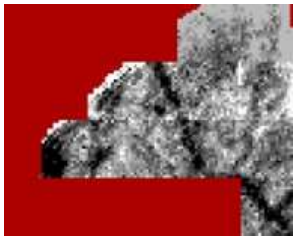
Figure 4.2a: Corrected data #1

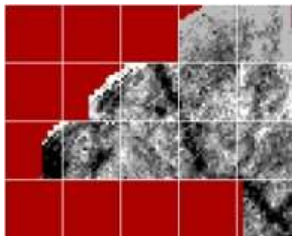
Figure 4.2b: Corrected data #1


Figure 4.3a: Corrected data #2

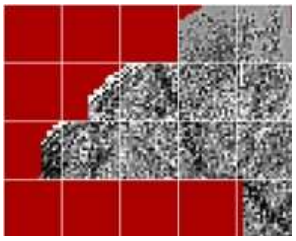
Figure 4.3b: Corrected data #2

4.3. **Filtered Data Plots**. Filtered data plots are provided in pairs; the first plot without grid lines in order to present an uninterrupted picture, the second plot with grid lines in order to aid with orientation. The corrected earth resistance data plots in Figures 4.2 and Figures 4.3 were both filtered by the application of interpolate (x2) (Figures 4.4 and 4.5).

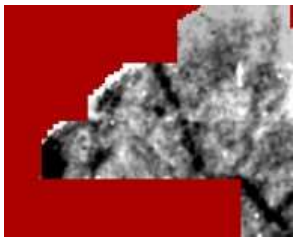
Figure 4.4a: Filtered data #1

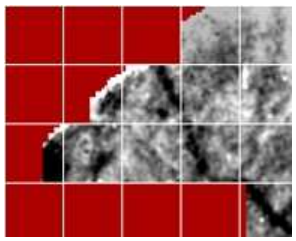
Figure 4.4b: Filtered data #1


Figure 4.5a: Filtered data #2

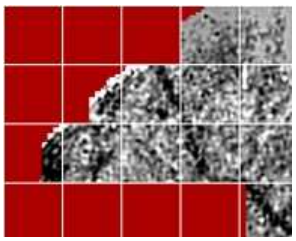
Figure 4.5b: Filtered data #2

5. **Analysis**. The filtered results in Figure 4.4a, reproduced here as Figure 5.1, show a number of distinct anomalies that are discussed below.

black = low resistance; pits, ditches, clay dumps
white = high resistance; walls, rubble, paving areas
red = areas not surveyed

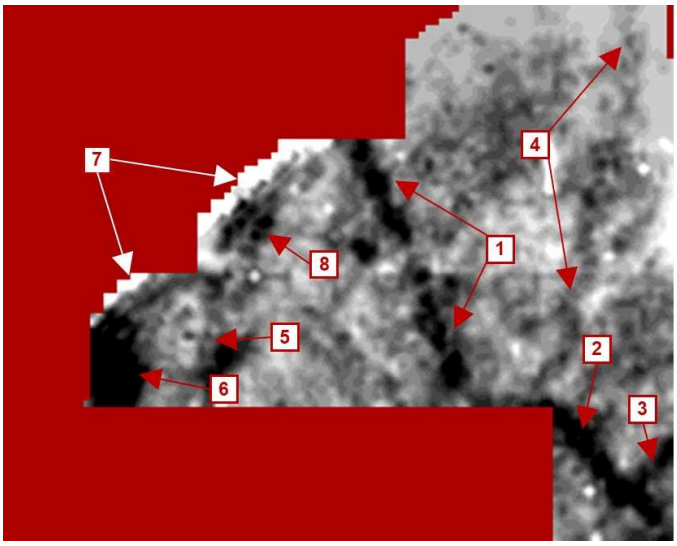

Figure 5.1: Filtered data #1 with identified anomalies

5.1. A broad low resistance linear feature (#1), approximately 5m in width, that is indicative of a boundary ditch, and appears to be a continuation of the possible boundary ditch identified in the Res171-5 geophysical earth resistance data results (Redgate & Hill, 2023: 12-13).

5.2. A broad low resistance linear feature (#2), approximately 5m in width, that is also indicative of a boundary ditch, and may be a continuation of #1. However, this anomaly could well be separate from, but associated with, anomaly #1.

5.3. A broad low resistance linear feature (#3), approximately 5m in width, that too is indicative of a boundary ditch, that adjoins at a right-angle with anomaly #2.

5.4. A feint low resistance linear feature (#4) that is indeterminate with regard to it being archaeological or geological.

5.5. A weak high resistance circular feature (#5) approximately 6-7m diameter, with associated low resistance anomalies that is indeterminate with regard to it being archaeological or geloligical.

5.6. A strong low resistance anomaly (#6) that is probably due to water saturation; although an underlying archaeological or geological feature cannot be discounted.

5.7. A strong high resistance mass (#7) in the field boundary hedge-line that is indeterminate with regard to it being archaeological or natural; although the likelihood is that it is reflective of the hedge itself.

5.8. A cluster of strong low resistance anomalies (#8), each approximately 1-2m diameter that are indeterminate with regard to their being archaeological or geological.

6. **Summary**. This was not a particularly successful survey with regard to total area surveyed and the quality of the results. Ground saturation dissipated the electrical signal, giving 'flat' results - as can be seen in the top two survey squares, and equipment issues limited the number of squares that could be surveyed. However, there were some positives, as anomaly #3 is seen to be a continuation into Long Nines of the potential boundary ditch identified in the Res171-5 survey of Hill Top, whilst the survey achieved its aim of providing volunteers with the basics of how to conduct a geophysical earth resistance survey; with seven volunteers receiving the basics of setting out a survey grid, the principles of geophysical earth resistance survey and practical use of the Geoscan Research RM85 Resistance Meter System and PA20 Probe Array assembly.

ANNEXES

A. Site Grid.
B. Sawtry History Society Geophysical Survey Record Sheets.
C. Additional Data Plot Display Options and Composite Plots.

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