#### YCCCART 2021 / Y12

#### Resistivity and Gradiometry Surveys off Ham Lane, Yatton. (Mr Crossman 1 & 11 and Mr G Burdge 8)

#### YATTON, CONGRESBURY, CLAVERHAM AND CLEEVE ARCHAEOLOGICAL RESEARCH TEAM (YCCCART)

General Editor: Vince Russett



Laying out the first resistivity grid in field 1.

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#### Abstract

A resistivity survey in a field bordering Ham Lane, Yatton, revealed a possible rectangular building. Gradiometry surveys appear to also identify this potential structure. A gradiometry survey in the same field identified a small square anomaly.

#### Acknowledgements

A Heritage Lottery Grant enabled the purchase, by YCCCART, of a Geoscan RM 15 resistivity meter and Bartlington 601 Gradiometer without which this survey could not have been undertaken.

This survey would also not have been carried out without the willing permission of the landowners, Mr D Crossman and Mr G Burdge.

The authors are grateful for the hard work by the members of YCCCART in performing the surveys.

#### Introduction

Yatton, Congresbury, Claverham and Cleeve Archaeological Research Team (YCCCART) is one of a number of Community Archaeology teams across northern Somerset, formerly supported by the North Somerset Council Development Management Team.

Our objective is to undertake archaeological fieldwork to enable a better understanding and management of the heritage of the area while recording and publishing the activities and locations of the research carried out.

#### **Site Location**



Fig 1: Field 1 (Mr Crossman 1), field 2 (Mr G Burdge 8) and field 3 (Mr Crossman 11)

The fields are to the north-west of Yatton. See appendix for GPS.

#### Land use and geology

The fields are used to grow grass for hay/silage. Geology: Mercia Mudstone Group – Mudstone and Halite-stone.

#### Historical & archaeological context



Fig 2. Map showing approximate location of Romano British pottery finds.

Field walking in the surveyed field 1, during the 1990s, revealed Romano British pottery.

The relevant report\* describes "a discrete scatter of pottery and stone from a low mound" in the area indicated by the red arrow in Fig 2 above.

\*

The Romano-British Exploitation of Coastal Wetlands: Survey and Excavation on the North Somerset Levels, 1993-7



*Fig 3: 1980s aerial photograph, courtesy of D Long.* 

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The aerial photograph, Fig 3 above, shows the surveyed field 1, indicated by the black arrow and to the north-east (in the field indicated by the red arrow in Fig 3) "earthworks of a relic landscape." (Rippon et all, 2000). These earthworks were believed to be the remains of a Romano British farmstead complex.

A YCCCART resistivity survey in 2014 / 2015 was reported in YCCCART 2014 /Y17 and revealed what appears to be part of a rectangular building.



Fig 4: Tithe map c 1840

The Tithe map and Lidar image (Figs 4 above and 5 below) show no additional potential archaeological features. The field layout in c1840 is the same as today.





#### **Survey objectives**

The objective of the resistivity survey was to enlarge the area surveyed in field 1 in order to identify any further anomalies and obtain further detail of the possible structure.

A gradiometry survey in field 1 was undertaken to establish if the resistivity results could be mirrored in any way. The gradiometry surveys in fields 2 and 3 were undertaken to identify any further anomalies and obtain a wider picture.

#### Methodology

The survey of the fields was undertaken during the period November 2014 to July 2021 by teams from YCCCART using

1) A Geoscan RM 15 resistance meter

The completed survey was downloaded to a TerraSurveyor programme and the resultant composite adjusted using the following filters:

- Band weight equaliser
- Grad shade
- Despiked
- Clip SD2
- High Pass filter.
- Periphery Match all grids
- Colour- Green, White, Black and Red Green Blue 2

#### 2) A Bartlington 601 gradiometer

The completed survey was downloaded to a TerraSurveyor programme and the resultant composite adjusted using the following filters:

- Band weight equaliser
- Grad shade
- Despiked
- Clip SD2
- Periphery Match all grids
- Colour Green, White, Black and Red Green Blue 2

The report was written in Microsoft Word.

Photographs were taken by members of YCCCART and remain the copyright of YCCCART.

#### Results

#### **Resistivity - Field 1**



Fig 6: TerraSurveyor shade view black and white image. High readings are black.

The results in Fig 6 above show that the field is divided by an edge of bedrock along the line indicated by the red arrows.

Yellow arrows indicate a possible rectangular structure.

The straight north south lines in the top right-hand grids are probably drainage pipes.

The results in the colour image in Fig 7 below also show clearly the results detailed above.



Fig 7: TerraSurveyor colour shade view image. High readings are red.





*Fig 8: TerraSurveyor shade view black and white image. High readings are black.* The results show a rectangular anomaly as indicated by the black arrow in Fig 8 above.

Yatton Geophysical Surveys South of Ham Lane Y12/2021 v1



Fig 9: Gradiometry and resistivity results overlaid on Google Earth image.

The black and white field 1 gradiometry result on the right in Fig 9 above also appears to show the ghost of a rectangular feature (Indicated by the red arrow). This is in the area where such a feature is evident in the resistivity results. (Left and overlaid on a gradiometry colour image). The gradiometry colour images in Fig 10 and 11 below mirror this.



Fig 10 TerraSurveyor shade view colour image. High readings are red.



` Fig 11: TerraSurveyor 3d colour image. High readings are red.



Fig 12: TerraSurveyor shade view black and white image. High readings are black.

The black band that runs across the bottom part of the results is probably associated with the slope that links the stream level to the upper field level. Apart from a small circular feature, in the full grid top left, there seems to be nothing of interest.



Fig 13: TerraSurveyor shade view colour image. High readings are red.

The colour and 3d image in Fig 13 above and Fig 14 below reveal nothing further.



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Fig 15: Left - TerraSurveyor black and white shade image. High readings are black.

The solid black line indicated by the red arrow in Fig 15 above matches the bank shown in the photo on the right.



Fig 16: TerraSurveyor colour shade image. High readings are red.

The colour images at Fig 16 above and Fig 17 below reveal no additional features.



Fig 17: TerraSurveyor 3d colour image.



Fig 18. Gradiometry surveys for the three fields on Google Earth image



Fig 19. Gradiometry surveys (colour image) for three fields on Google Earth image

#### Recommendations

The possible rectangular structure could be excavated to establish its date.

#### References

# The Romano-British Exploitation of Coastal Wetlands: Survey and Excavation on the North Somerset Levels, 1993-7

Stephen Rippon; G. Aalbersberg; J. R. L. Allen; S. Allen; N. Cameron; C. Gleed-Owen; P. Davies; S. Hamilton-Dyer; S. Haslett; J. Heathcote; J. Jones; A. Margetts; D. Richards; N. Shiel; D. Smith; J. Smith; J. Timby; H. Tinsley; H. Williams; Julie Jones; Nigel Cameron; Paul Davies; Simon Dobinson; Chris Gleed-Owen; Simon Haslett; Jen Heathcote; Anthony Margetts; David Smith; Heather Tinsley; Huw Williams; Gerard Aalbersberg; Sheila Hamilton-Dyer; Jane Timby; Norman Shiel; David Richards; Steven Allen

Britannia, Vol. 31. (2000), pp. 69-200.

A YCCCART resistivity survey in 2014 / 2015 was reported in YCCCART 2014 /Y17

Author Chris Short

Date: April 2022

# Appendix – Extracts from Day Sheet

# Resistivity – Field 1

	Survey area	Notes				
		Size	Walk direction			
30 October	Grids 1 to 3	20x20m	W			
6 November	Grids 1 to 3 Grid 3 – wet/boggy	20x20m	W			
20 November	Grids 1 to 3	20x20m	W			
4 December	Grids 1 to 3	20x20m	W			
23 April 2015	Grids 1 to 4	20x20m	W			
15 October 2015	Grid 1	20x20m	W			
22 October 2015	Grids 1 to 3	20x20m	W			

Grid layout



<b>FPS</b>	1

А	342542.77	167278.48
В	342535.79	167294.87
С	342528.21	167314.07
D	342520.36	167332.85
E	342511.30	167350.09
F	342504.62	167369.75
G	342497.07	167388.24
Н	342451.57	167237.23
Ι	342432.21	167228.33
J	342414.47	167220.95



## TerraSurveyor grids

30oct01 6nov0120nov0120nov0223apr0123apr02	
30oct02 6nov0220nov034dec03 23apr0323apr04	15oct01
30oct03 6nov03 4dec01 4dec02 22oct0122oct02	22oct03

#### **Gradiometry – Field 1**



Grid layout

Grid Ref.	All ST							
	eastings	northing s	167320.00 -					R <sup>2</sup> = 0.1206
A	342455.90	167127.30	167300.00			•		
В	342456.20	167157.90	167260.00 -				•	
С	342456.70	167188.30	167240.00					•
D	342456.50	167217.80	167200.00					•
E	342456.70	167247.80	167180.00					
F	342456.40	167277.30	167140.00 -					
G	342456.20	167307.30	167120.00	•				
Н	342456.00	167337.10	4 00.001/01	a a	0.0	~~ ~	0	ه ه
I	342455.70	167368.00	A.5.	ak55. ak56.0	0 450- X 0 4	50." a 50."	ah 56. ah 56	··· ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
			344 0	shi 3hi	344 344	344 3	she zake	344 344
auiet spot	342437.3	167222.5						

#### Setting out detail -

Position I - 10m due North to paint mark in hedge and 20.8m to tree to NW

Position D - 9.3m to mark NE and 9.5m to mark on post to SE

Quiet spot – 23m from mark on north post and 22.9m from mark on south post GPS E.  $\underline{342437.3.N}$  167224.5

#### **Terra Surveyor grids**



Field 2 - Gradiometry

Survey area		notes	5	readings						
			size walk direction		min	mean				
Date	Grid number									
29/04/2021		Setting out base 1	Setting out base line and grids for base line and first two ro							
		Se	tting grids for re	st of the f	ield					
	1	30 x 30	W	Void d	ata _ oper	ator error				
	2	30 x 30	W	+21.6	-15.5	+4.1				
	3	30 x 30	W	+17.0	-31.9	+3.6				
	4	30 x 30	W	+24.3	-11.6	+3.4				
	5	30 x 30 M & R	W	+8.5	-100	+2.6				
	6	30 x 30	W	+29.7	-27.1	+3.4				
	7	30 x 30	W	+17.0	-25.4	+3.6				
	8	30 x 30	W	+45.5	-21.1	+3.8				
	9	30 x 30 M & R	W	+40.6	-100	+3.4				
06/05/2021	1	Partial M & R	W	+99.3	-94.4	-4.2				
		Wire in fence								
	2	Partial M & R	W	+21.0	-100	-3.3				
	3	Partial M & R	W	+52.0	-100	+0.2				
	4	Partial M & R	W	+3.7	-61.8	-7.4				
	5	Partial M & R	E	+77.1	-72.5	-1.1				
	6	Partial M & R	E	51.9	-21.4	-0.9				
	7	Voi	d – operator erro	r – ignore	data					
	8	30 x 30	E	+59.6	-36.6	-1.4				
	9	30 x 30	E	+39.7	-42.7	-0.6				
	10	Partial M & R	E	+14.3	-86.9	-5.2				
	11	Partial M & R	E	+11.6	-14.6	-3.2				
	12	Partial M & R	E	+23.2	-35.1	-2.7				

Grids



Location A - 3.65m from single white mark and 13.6m from marked bush.

Location E - 4.0m from single white mark on hedge and 10.8m from marked fence post.

Quiet spot – 13.9m from single white spot & 12.2m from double white spot by Moor Road boundary

#### Grid layout Grid Ref. All ST 167280.00 167260.00 167240.00 167220.00 eastings northings 167148.10 A 342549.70 R<sup>2</sup> = 0.9972 В 342548.90 167177.40 C D 342548.20 167207.50 167200.00 167180.00 167160.00 342,547,60 167237 60 E 342546.90 167267.70 167140.00 167120.00 342547.00 342:47.9 342548,00 342548.39 342549.09 342549.59 342546.99 342,530,00 quiet spot 342560 167225.7

**TerraSurveyor grids** 



Survey area		notes	5	readings				
		size walk direction		max	min	mean		
Date	Grid number							
10/06/2021		Setting out base li	Setting out base line and grids for b					
	1	30 x 30	W	+90.8	-16.5	-1.3		
	2	30 x 30	W	+15.4	-5.2	-1.0		
	3	30 x 30	W	+9.2	-1.8	-1.2		
	4	30 x 30	W	+37.5	-16.0	-0.9		
	5	30 x 30	W	+22.7	-20.2	-0.9		
	6	Partial 1 full tray	W	+75.8	-98.5	-4.0		
01/07/2021	1	30 x 30	W	+96.6	-97.8	+0.3		
	2	30 x 30	W	+10.6	-13.5	+0.1		
	3	30 x 30	W	+43.9	-34.5	+0.7		
	4	30 x 30	W	+25.3	-7.3	+0.6		
	5	Partial M & R	W	+13.2	-18.4	+0.8		
08/07/2021	1	30 x 30	W	+25.1	-23.5	-2.2		
	2	30 x 30	W	+34.2	-18.6	-3.0		
	3	30 x 30	W	+17.2	-9.8	-2.6		
	4	Partial M & R	W	+33.4	-12.0	-2.2		
	5	Partial M & R	W	+5.9	-34.2	-2.5		
	6	Partial M & R	W	+100	-100	-6.4		
	7	Partial M & R	W	+100	-100	-2.5		
	8	Partial M & R	W	+100	-100	-12.8		
	9	Partial M & R	W	+100	-100	+5.1		
	10	Partial M & R	W	-15.6	-100	-56.4		
		Metal gate and						
		fence						
	1	Partial M & R	E	+2.9	-11.2	-1.5		
	2	Partial M & R	E	+4.6	-73.6	-4.3		
	3	Partial M & R	E	+0.2	-8.6	-3.2		
	4	Partial M & R	E	+96.6	-80.8	-2.7		
	5	Partial M & R	E	+25.2	-10.9	-4.0		
	6	30 x 30	E	+25.6	-14.6	-3.2		
		Re-survey		-				

### Field 3 - Gradiometry



# Grid layout

Setting out detail

Position G on base line – 5.5 m from northern gate post and 5.55 from other southern gatepost – entry to field

Position of quiet spot – 30.8m from northern gate post and 27.9m from <u>other</u> southern gatepost E\_342359\_2 N 167275.8 GPS

				•					
Grid Ref.	All ST								
	eastings	northings	167320.00						
A	342367.75	167133.69	167300.00	•	-				
В	342366.64	167162.55	167260.00					R <sup>2</sup> = 0.9971	
С	342365.60	167192.96	167240.00						
D	342364.72	167223.13	167220.00				<u> </u>		
E	342363.46	167250.14	167180.00				*	<u>.</u>	
F	342362.60	167283.59	167160.00					*	
G	342361.96	167301.97	167120.00	 	1	1			~ <b>•</b>
			32361.0	342362.00	342363.00 34	364.00 34365.0	32366.00	34267.00 34	268.00 3423
quiet spot	342359.2	167275.8							

15 july06	10jun01	1 july01	<mark>8 jul01</mark>	<mark>8 jul06</mark>	
15 july05	10jun02	<mark>1 july02</mark>	<mark>8 jul02</mark>	<mark>8 jul07</mark>	
15 july04	10jun03	<mark>1 july03</mark>	<mark>8 jul03</mark>	<mark>8 jul08</mark>	
15 july03	10jun04	1 july04	<mark>8 jul04</mark>	<mark>8 jul09</mark>	
15 july02	10jun05	1 july05	<mark>8 jul05</mark>	<mark>8 jul 10</mark>	
15 july01	10jun06				

Terra surveyor grids