

YCCCART 2021/Y2

Geophysical surveys at Thornworth, Kingston Seymour

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RESEARCH TEAM (YCCCART)**

General Editor: Vince Russett



The Thornworth area from the 1821 parish map (SHC A/CFS/1)

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Abstract

Geophysical surveys were carried out at two fields adjacent to Ham Lane, Kingston Seymour in summer and autumn 2018. Initial gradiometry responses in the northern field indicated potential Roman activity, but this proved invisible to resistivity survey.

Acknowledgements

A Heritage Lottery Grant enabled the purchase, by YCCCART, of a Geoscan RM 15 resistivity meter and a Bartington Gradiometer 601 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 Stowell and Mrs Bush.

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

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

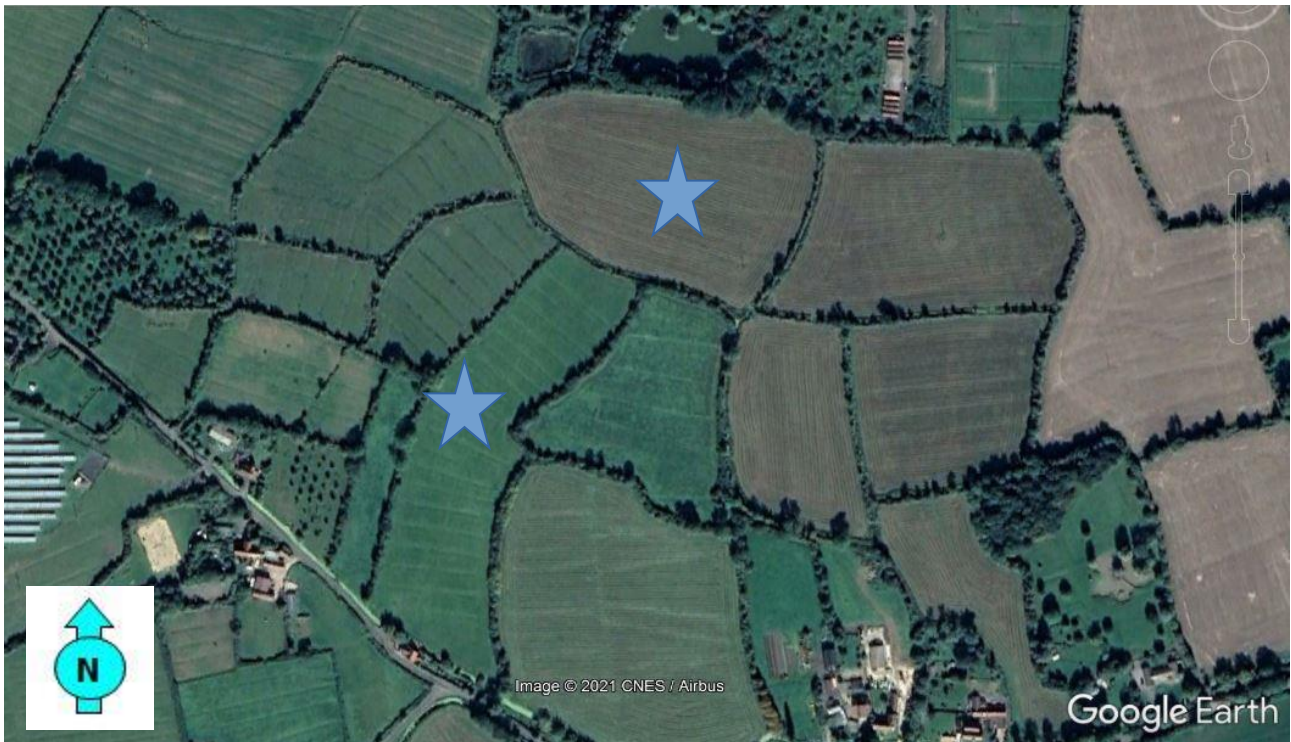


Fig 1 The survey area (starred fields)

The two fields surveyed are centred on ST39136679 and ST39306703, north of Ham Lane in the parish of Kingston Seymour, 8.5 km NE of Weston-super-Mare in North Somerset.

Land use and geology

In 2018, the southern field was under permanent pasture, while the northern was under short-term ley.

Both fields lie entirely on the Estuarine alluvium of the Northmarsh: a borehole in 1961 some 100m south-east of the site at ST39586655, by Ham Lane (British Geological Survey ST36NE6) failed to encounter bedrock although 21m deep, the geology entirely consisting of interbedded alluvial clays and peat. A public footpath from Ham Lane to Middle Lane runs through both fields.

Historical & archaeological context

The site was brought to our attention by Jane Bell, of Kingston Seymour, who had found Roman pottery in the northern field, and on field reconnaissance, further small quantities were found.

The northern field also has a name of some interest in landscape terms: Thornworth (from Kingston Seymour TM 1846 - SHC D/D/rt/M/465).

Quite a deal of archaeological and historical attention has been applied to this 'worth' term, because its potential for revealing early post-Roman settlement. No absolute academic consensus has been made (Costen 1992, for example, or Gelling and Cole 2000), but the model revolves around 'enclosed farmstead, area surrounding a farmstead' A telling use of the word is found as early as the 'Dooms' of King Ine in the late 7th/early 8th century where he says

'Ceorles worðige sceal beon wintres ond summeres betyned. Gif he bid untyned ond recð his neahgubies sceap in on his agen geat, neh he æt þam ceape nam wiht: adrite hie ut ond ðolie [þone] æfwerdlan.'

[A commoner's premises shall be fenced both winter and summer. If they are not enclosed and a beast belonging to his neighbour strays through the opening he himself has left he shall have no claim on the beast [but] he shall drive it out and suffer the damage.]

worðige and *worð* are usually assumed to be cognate: the Tithe Map of Kingston includes three other examples of the element, all close to, or within 'infield enclosures' in the parish (Gilbert 1996; Rippon 2001). These infields (the name originated with Stephen Rippon) are apparently early oval enclosures laid out early in the sequence of post-Roman re-occupation of the Northmarsh (Gilbert 1996; Rippon 2001) (Fig 2).

Unfortunately, there appear to be no earlier versions of these names than the Tithe Map, so there is potential for confusion.

Thornworth (our northern survey field) is clearly a very early feature in the landscape since all the fences and ditches around it terminate at its boundary (meaning they are later), as well as the Roman material found in or near it.

It also lies at the boundary of one of Gilbert's 'infield's (named by her for Middle Lane Farm, the current site of fishing lakes). It is probably worth pointing out that a watching brief on these ponds found no evidence of bedrock either (they are approximately 3m deep).

Gilbert also tested the hypothesis that these sites had been chosen because they were initially higher than their surroundings, but this was disproven (see Fig 3).

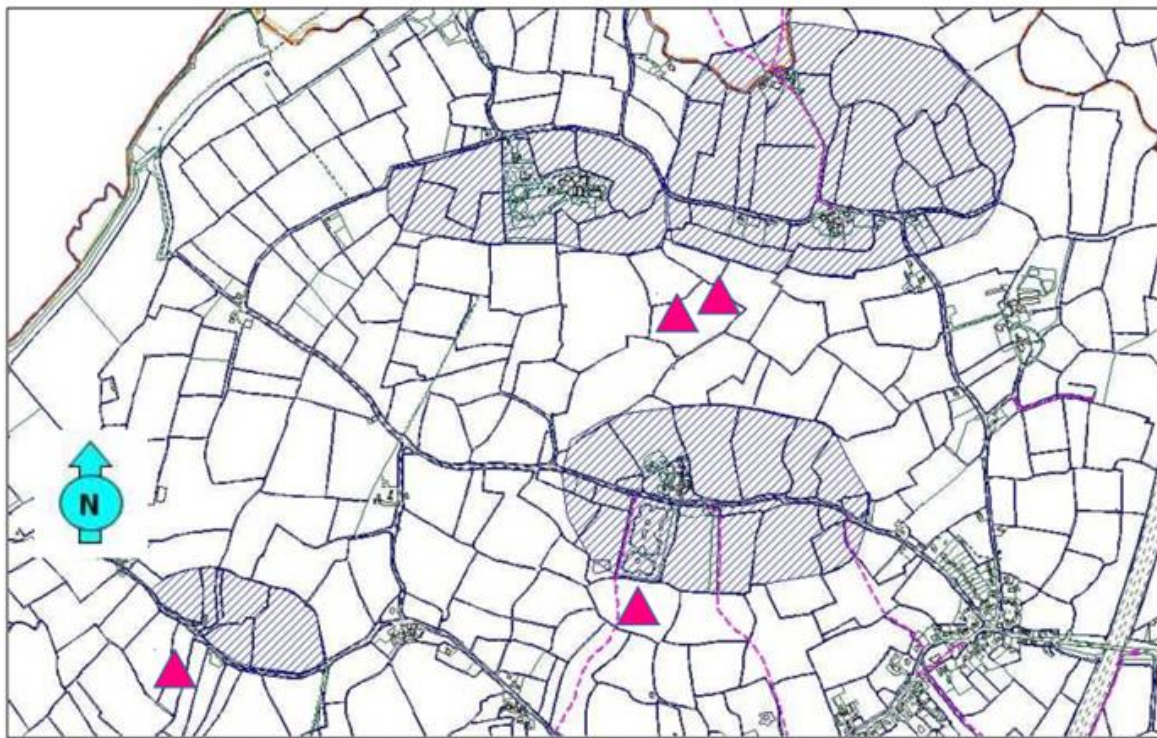


Fig 2: Some 'infields' at Kingston Seymour (blue hatching). Red triangles denote 'worth' field names.

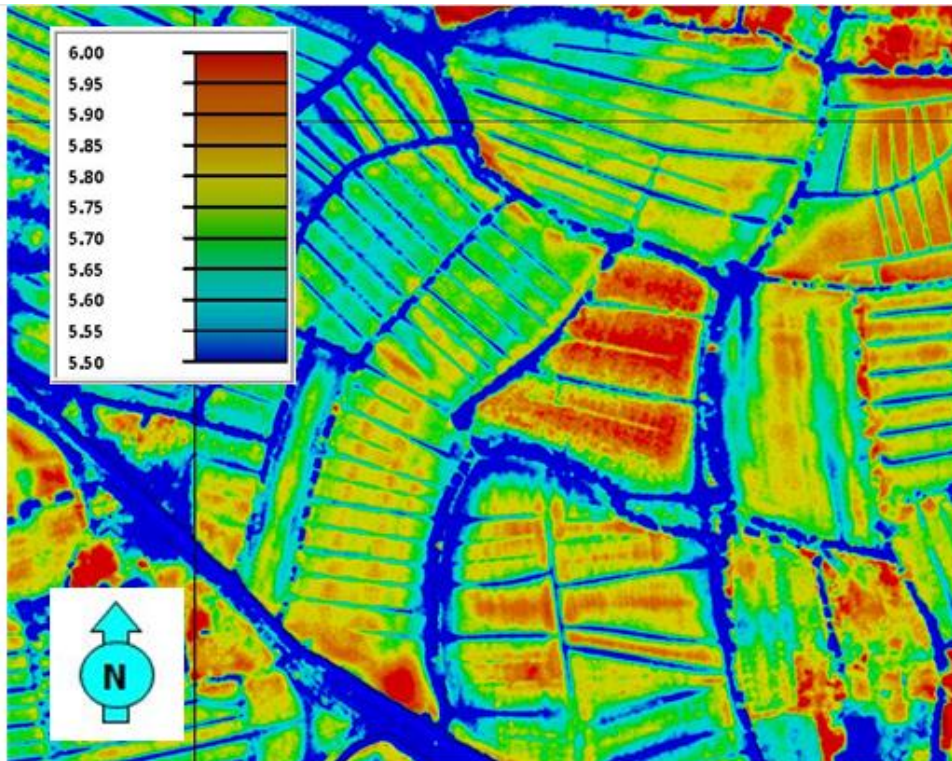


Fig 3 Local lidar scan (Heights above AOD).

Note from this lidar scale that the topography Varies by only 0.5m at most, and generally far less.

An oblique view below (Fig 4) is telling

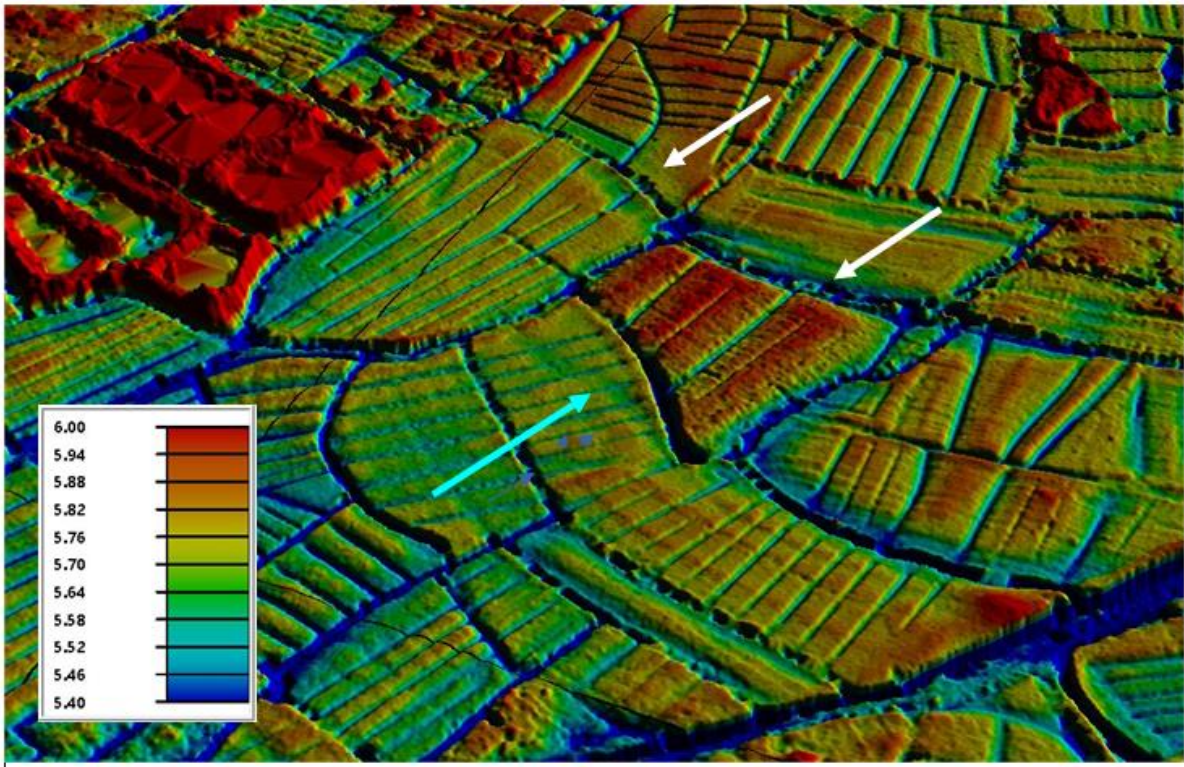


Fig 4: SW oblique lidar view of survey area (z-axis exaggerated x10)

Because of the extreme low relief, the Z-axis has been exaggerated by x10, which gives new perspectives.

A palaeochannel (white arrows) forms the east side of Thornworth, although the modern ditch has migrated some metres from it.

The second palaeochannel (cyan arrow) does not appear in Thornworth despite best effort with lidar, and so presumably turns into the rhyne on the south side of Thornworth: it is more likely to turn left, since this is (just about) the direction of water flow.

The 'ridge and furrow' in the southern field shows up more clearly, too. In the Northmarsh, such parallel ridges are far more likely to be the remains of former orchards.

As the ditch to the north side of Thornworth also appears to occupy a palaeochannel, it means that this 'worth' is surrounded on about 79% of its circumference by natural channels: this might again be a reason for making an 'enclosed farm' - not much extra digging to do!

Survey objectives

Initial survey (gradiometry) was an attempt to provide a context for the Roman finds from the site (Thornworth). If indications of potential occupation were found, this would be followed up by resistivity survey.

Any indication of structures / activity relating to a 'worth' might prove a bonus.

Once some hopeful indications were established in 'Thornworth' the southern field was added to the survey area.

Methodology

The survey of the fields was undertaken during the period 28th June to 15th November 2018 by teams from YCCCART using a Bartington Grad 601-2 (gradiometry) and a Geoscan RM-15 resistance machine.

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

Resistivity

Band weight equaliser
Grad shade
Despiked
Clip SD2
High Pass filter.

Gradiometry

Colour - Red Blue Green 2
Band weight equaliser
Grad shade
Destriped
Despiked
Clip SD2

The report was written in Libre Office 5 Writer.

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

Results



Fig 5: Overall gradiometry results (both fields)

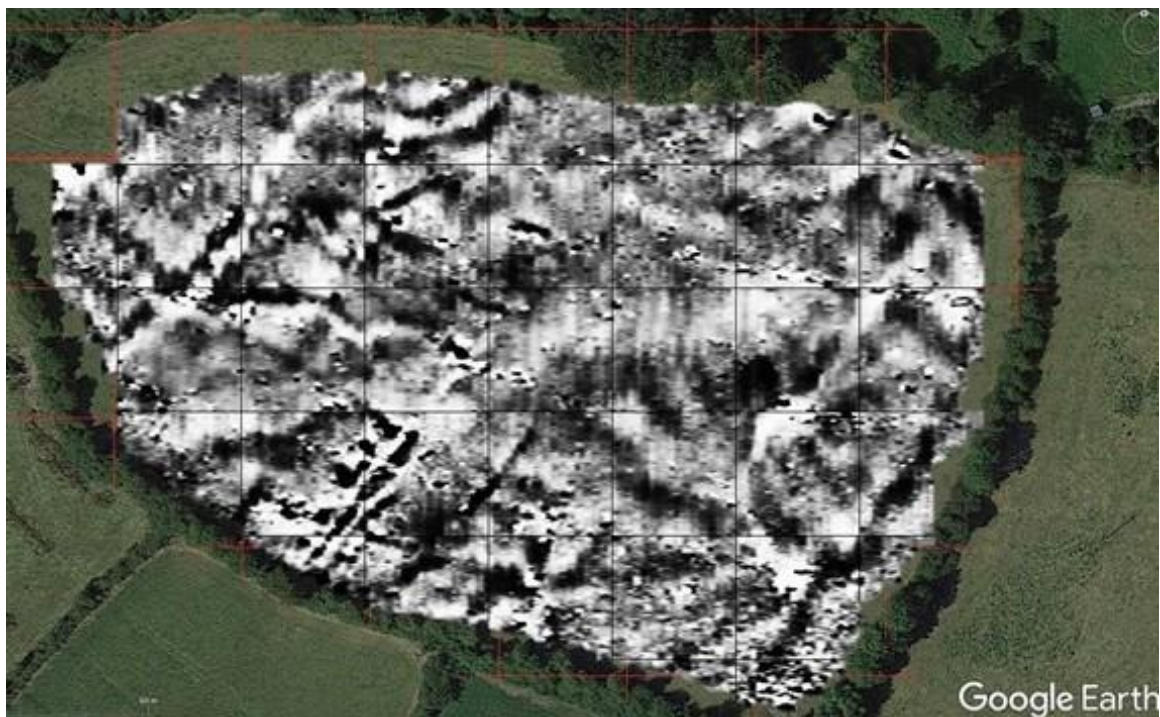


Fig 6: Northern field (Thornworth) gradiometry results

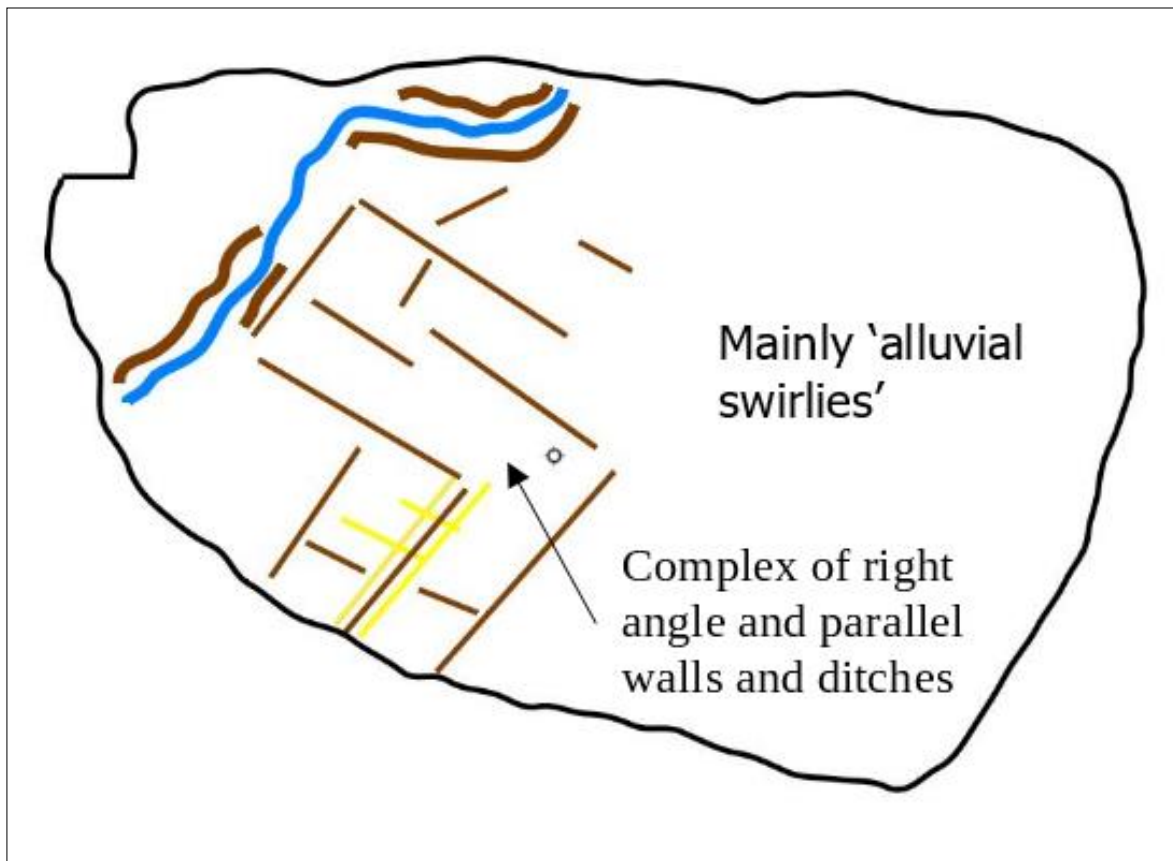


Fig 7: Possible interpretation of geophysical survey at Thornworth

The results looked really promising. While the triple signal at A is probably the line of a palaeochannel (not visible in the lidar images: see Figs 3 and 4), and most of the signals in the east end of the field are recognisable as natural 'swirling' in the alluvium, a very artificial-looking pattern of linear signals, largely parallel and at right angles to each other appeared in the western half of the field.

These bore (as Chris Short pointed out) remarkable similarities to a geophysical survey of the previously excavated RB villa at North Leigh in Oxfordshire (Creighton & Allen 2017). In the light of this, resistivity surveys were carried out to see if it was possible to locate any buried stone structures.

Unfortunately (Fig 8) these were unhelpful. Reasons for this may be complex. Firstly, the Roman layers may be buried beneath the reach of resistivity survey (perhaps more than 1m: circumstantial evidence (J Bell, *pers comm*) seems to indicate this is probably the case over much of Kingston parish: the depth of post-Roman alluviation does not seem to decrease or cease until sites as far inland as Kenn Moor or Banwell Moor are reached, above 4km inland from the present shoreline). This subject was usefully discussed in Taylor 1995.

Secondly, in what may even in Roman times have been an alluvial environment, even major buildings may have been of timber construction, with only real 'top-of-the-range' buildings like Wemberham RB villa (being both very important and by a river for easy transportation) have been built in stone. These timber structures do not respond well to resistivity survey, and are usually only found after intrusive excavation

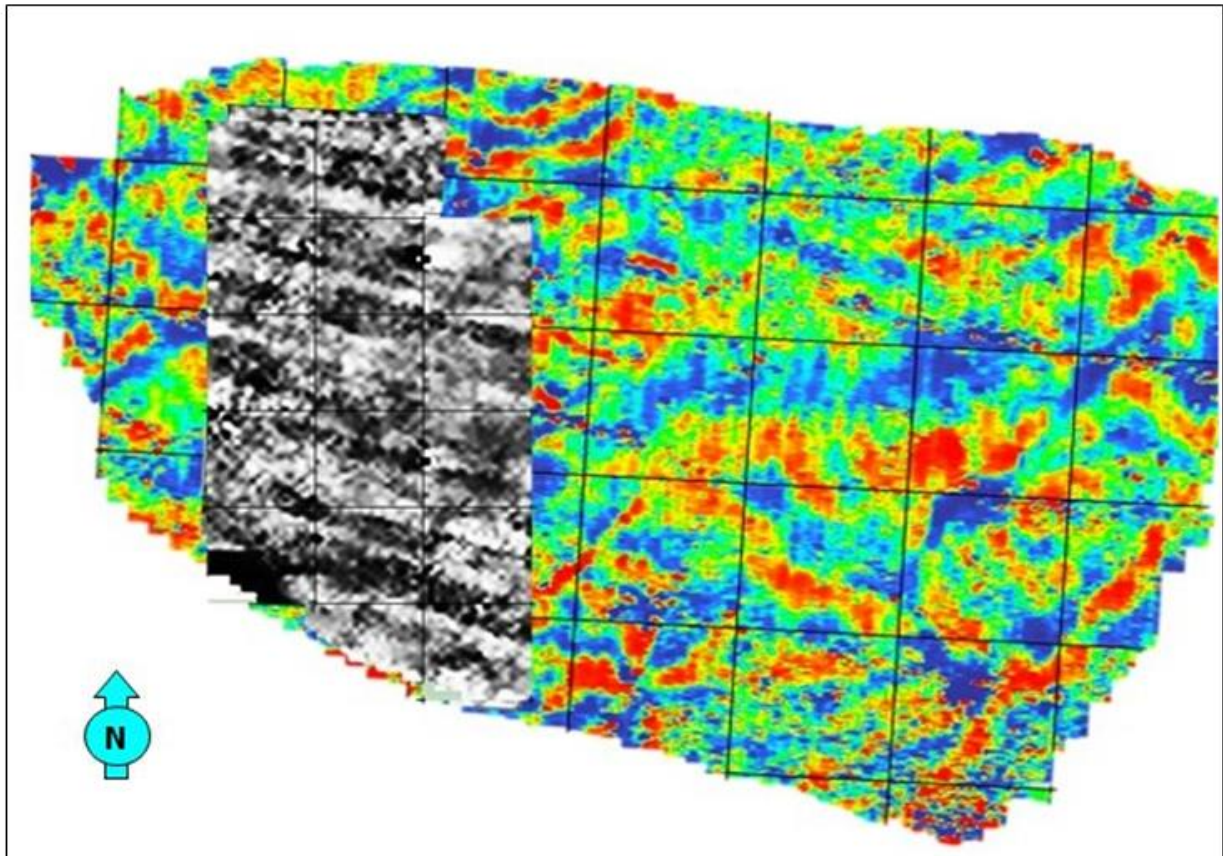


Fig 8: Attempted resistivity survey of Thornworth (monochrome resistance data laid over coloured gradiometry data)

It was clear from initial results (Fig 8) that the site was not responding to resistivity survey, but only reflecting surface detail, so the survey was reluctantly abandoned.

Southern field

Since Thornworth (the northern field) showed signs of potential Roman occupation, the survey was extended to the southern field, lying between Thornworth and Ham Lane.

The survey (Fig 9) was, in the event, unproductive.

Fig 9: Gradiometry survey of southern field.

This field showed no further additions to the parallel and right angle features seen.

While a potential circular feature can be seen at A, and the line of a potential palaeochannel at B, nothing else appears to be of anthropogenic origin, and these features themselves may derive wholly from the natural alluviation patterns.

It is intriguing that none of the features (especially the large gripes and the parallel curved banks) seen in the lidar are present in the gradiometry survey.



Overall, the results imply possible Roman settlement in the northern field, but have revealed nothing recognisably relevant to a possible mid-Saxon 'worth'.

While perhaps a little disappointing, the survey does establish limits on what might be visible at such a 'worth' site to geophysical survey: we should perhaps not expect stone buildings or similar large structures at such sites, judging by these results, but of course, further work on other 'worth' sites would be required to test this.

Recommendations for further work

Further organised field walking in Thornworth when ploughed, might help to establish the nature and date of the potential Roman settlement there.

References

Costen, M. 1992	A history of Somerset
Creighton, J. & Allen, M. 2017	<i>Fluxgate gradiometry survey at North Leigh Roman Villa, Oxfordshire</i> Britannia 48: 279 - 287
Gelling, M. & Cole, A. 2000	The Landscape of Place-names
Gilbert, P. 1996	<i>The pre-Conquest landscape at Kingston Seymour on the North Somerset Levels: report on survey 1996</i> in Archaeology in the Severn estuary 7: 53-57.
Rippon, S. 2001	<i>Infield and outfield: the early stages of Marshland colonisation and the evolution of medieval field systems</i> in Lincolnshire Archaeology and Heritage Reports Series No 5
Taylor, R. 1995	<i>An analysis of sea level change in the Severn Estuary</i> from Explore Bristol Research, http://research-information.bristol.ac.uk

Authors

Vince Russett

Date

2021-05-21

Day sheet extracts

Gradiometry – Mr Stowell 1

Survey area		notes		readings		
Date	Grid number	size	walk direction	max	min	mean
21/06/2018		Setting out base line and grids for base line and first row				
28/06/2018	1	30 x 30	S	+11.8	-7.8	+1.5
	2	30 x 30	S	+31.0	-41.0	+1.4
	3	30 x 30	S	+6.7	-11.5	+1.1
	4	30 x 30	S	+16.0	-7.7	+2.2
	5	30 x 30	S	+16.8	-100	+1.1
5/7/2018	1	30 x 30	S	+24.1	-10.1	+1.3
	2	30 x 30	S	+15.5	-26.3	+0.6
	3	30 x 30 partial	S	+80.7	-17.2	+0.6
	4	M&R	N	+15.0	-4.1	+1.5
	5	M&R	N	+7.0	-3.2	+2.0
	6	M&R	N	+14.6	-26.1	+1.4
	7	M&R	N	+21.0	-8.7	+1.0
	8	M&R	N	+26.2	-1.0	+1.4
	9	M&R	N	+100	-7.1	+2.4
	10	M&R	N	+98.9	-2.9	+2.9
19/7/2018	1	30 x 30 M & R	S	+64.1	-29.0	+1.8
	2	30 x 30	S	+38.8	-13.5	+0.3
	3	30 x 30	S	+16.1	-7.4	+0.1
	4	30 x 30	S	+12.0	-17.6	+0.1
	5	30 x 30	S	+28.8	-17.1	+1.5
	6	30 x 30	S	+31.6	-17.2	+1.1
	7	30 x 30	S	+28.3	-32.4	+0.1
	8	Partial M & R	S	+3.4	-3.8	0.1
26/7/2018	1	30 x 30 M & R for first 5 trav	S	+10.0	-5.9	+2.3
	2	30 x 30	S	+25.2	-9.3	+1.6
	3	30 x 30	S	+10.9	-16.1	+1.9
	4	30 x 30	S	+44.1	-42.4	+1.8
	5	30 x 30	S	+30.8	-10.	+2.2
	6	30 x 30	S	+39.9	-9.3	+2.2
	7	30 x 30 M & R	S	+14.9	-24.2	+2.3
2/8/2018	1	Partial M & R dummy data to traverse 9	S	+6.1	-8.7	+0.2
	2	30 x 30 M & R tele pole at traverse 9 - 11	S	+97.9	-23.0	+0.9
	3	30 x 30 M & R dummy data to traverse 5- farm track between fields	S	+11.1	-29.1	+0.3
	4	30 x 30	S	+34.2	-34.7	+0.7



Setting out detail

A – 5m from tree to left and 11 m to tree on right hand side

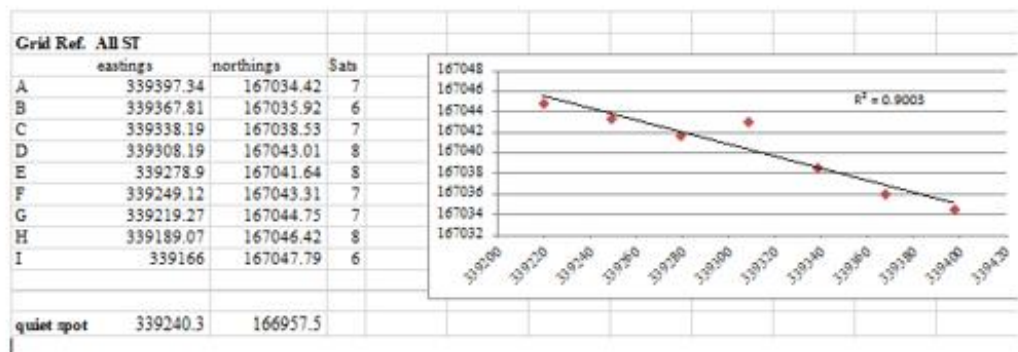
I – 5.66m from right hand gate post and 6.7m from left-hand gate post

Position of quiet spot
Directly in line with bridge –
18.4 m to LH stile post

E 339240.30

N 166957.50

9



Resistivity - Mr Stowell 1

Survey area		Notes	
		Size	Walk direction
4 October 2018	Re- laid 601 grids		
18 October 2018	Grids 1 to 4	20x20m	West
25 October 2018	Grids 1 to 4	20x20m	West

1 November 2018	Grids 1 to 5 2-4 partial grids	20x20m	West
15 November 2018	Grids 1 to 3	20x20m	West



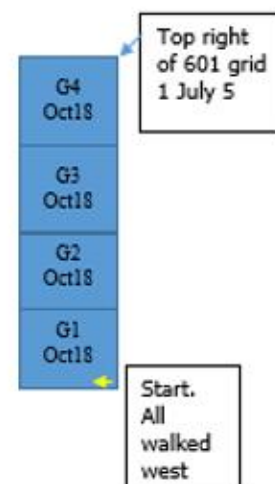
Re-laid base line A to I

Re-laid for RM15 survey

This is 18.1m to middle of bottom of the style and the distance to the next south is only 15m. This southern most point is to the right of the style

Grid layout

2 Oct 25	1 Oct 25	
3 Oct 25	4 Oct18	3 Nov15
4 Oct 25	3 Oct 18	2 Nov15
1 Nov 1	2 Oct 18	1 Nov 15
2 Nov 1	1 Oct 18	5 Nov 1
	3 Nov1	4 Nov 1



Gradiometry Mrs Bush 1

Survey area		notes		readings		
Date	Grid number	size	walk direction	max	min	mean
9/08/2018		Setting out base line and grids for base line and other rows				
	1	Partial M & R	W	+21.8	-9.6	+0.5
	2	30 x 30	W	+20.4	-12.1	+1.0
	3	30 x 30 Power lines X grid	W	+26.2	-100	-0.4
	4	30 x 30	W	+69.4	-25.7	+1.5
	5	30 x 30	W	+13.5	-12.2	+1.0
	6	30 x 30	W	+16.6	-20.6	+0.8
	7	30 x 30	W	+9.7	-10.5	+0.7
	8	30 x 30 M & R	W	+30.4	-50.5	+2.3
23/8/2018	9	Partial M & R finish traverse 13	W	+5.8	-99.4	-2.8
	1	30 x 30, M & R traverses 1 & 2	W	+80.3	-86.2	-0.1
	2	30 x 30	W	+11.7	-20.3	-0.6
	3	30 x 30 Power cables cross grid	W	+41.3	-48.2	-1.2
	4	30 x 30	W	+48.5	-16.2	-0.5
	5	30 x 30, M & R from traverse 6	W	+40.7	-25.6	-1.6
30/8/2018	6	Partial M & R Barbwire in fence	W	+47.7	-100	-2.4
	1	30 x 30	E	+19.3	-19.9	+2.1
	2	30 x 30 M & R 4 full trav, only	E	+6.5	-36.3	+0.9
	3	30 x 30 M & R Wire fence in hedge	E	+24.6	-15.2	+1.4
	4	30 x 30 M & R	E	+17.9	-3.8	+2.1
	5	30 x 30 Dummy data Start trav 1 - 4m	E	+14.4	-43.4	+1.9
	6	30 x 30	E	+23.2	-9.9	+1.7
06/09/2018	7	30 x 30 M & R	E	+6.0	-33.0	+0.8
	1	30 x 30 Repeated grid	E	+20.8	-19.2	+2.3
	2	30 x 30 o/h power lines	E	+18.3	-16.0	+2.1
	3	30 x 30, M & R from traverse 10 Wire fence	E	+36.7	-68.8	+0.7
	4	Partial M & R Wire fence	E	+6.9	-64.4	-3.8

Survey area		notes		readings		
Date	Grid number	size	walk direction	max	min	mean
	5	Partial M & R o/h power lines Wire fence	E	+7.0	-13.5	+1.2
	6	Partial M & R Wire fence	E	+25.3	-100	-8.1
	7	Partial M & R Wire fence	W	+16.6	-39.5	+0.4
	8	Partial M & R Wire fence	W	+18.3	-91.9	-1.6
	9	30 x 30, M & R from traverse 12	W	+11.6	-27.1	+1.6
	10	Partial M & R	W	+14.0	-60.2	-2.0
	11	30 x 30 M & R Repeated grid	W	+34.3	-48.9	+2.1
13/09/2018	1	30 x 30	E	+26.2	-23.1	+3.0
	2	30 x 30 M & R 8 full, rest M & R	E	+7.6	-21.9	+2.4
	3	30 x 30 M & R final traverse	W	+12.1	-21.3	+3.6
	4	Partial M & R	W	+22.6	-61.3	+1.6
	5	Partial M & R Dummy data trav 1 & 2	W	+13.5	-11.8	+3.5
	6	30 x 30 M & R	W	+37.7	-19.3	+2.4
	7	30 x 30 M & R	W	+45.5	-12.0	+2.4
	8	30 x 30 M & R	W	+8.9	-3.0	+3.7
	9	Partial M & R	W	+27.6	-69	+0.4



Setting out detail

A – 7.10m to LH stone (339149.52, 166616.37) and 5.10 to R (339143.98, 166619.98)

J – 2.35 to (339146.18, 166886.39) and 2.58 to (339147.45, 166886.40)

Position of quiet spot

Telegraph pole to quiet spot 40.75m. gate post to quiet spot 44m

E 339113.20

N 166664.98

