YCCCART 2023/Y12

### Geophysical surveys at Rushy Ground, Ham Lane, Kingston Seymour

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

General Editor: Vince Russett



Resistivity team at Rushy Ground

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#### Abstract

Gradiometry surveys at Rushy Ground / Bowshers Ten Acres were difficult to interpret, but probably represent features within the known post-Roman alluvial TFDs. Little of the 'speckled' gradiometry responses that seem to indicate human occupation and/or industrial activity were seen, and those that were revealed nothing on subsequent resistivity survey. While it is perhaps disappointing that we appear to be unable to see through the thick post-Roman deposits using geophysics, it nevertheless allows us to carry out surveys in the post-Roman alluviated medium, studies which are unusual or rare elsewhere and may perhaps carry clues as to human activity during that period.

#### 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 P and Mrs D Kingcott and Jane Bell.

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 a Community Archaeology team working across northern Somerset.

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: Location (general) (site starred)



Fig 2: Location (detail)

Rushy Ground is a field of approximately 3.48 Ha (8.6 acres), with extremely low relief, surrounded by waterfilled ditches on all sides. It lies at ST38356691, off Ham Lane in the parish of Kingston Seymour, in North Somerset.

#### Land use and geology

Rushy Ground is used as pasture and meadow, and is occasionally ploughed for reseeding.

The site lies on Tidal Flat Deposits (TFDs), dominated by the meters thick partly oxidised alluvial clays of the Wentlloog deposits, often leading to waterlogging in winter. This clay has been bored to peat at 5.5m below field level at the SE corner of Rushy Ground (British Geological Surveys 1961, and see YCCCART 2023).

There is no public access, although the whole field is visible from Ham Lane.

#### Historical & archaeological context

Part of the great archaeological importance of Kingston Seymour parish is that it is one of the few in the Northmarsh, along with Puxton and Wick St Lawrence, that are entirely or almost entirely on the alluvium, so that (as has been frequently pointed out by historians) the highest point in the parish is the top of the church.

There are other similar but better documented and published parishes to the south of Mendip (Lympsham, Berrow, Burnham-on-Sea, for example), but most 'marshland' parishes have (presumably by design) upland sections as well, even if only of low relief, such as Kenn or Meare in Somerset.

This is a landscape of very low (but very real) relief, largely waterlogged, with all the accompanying archaeological implications, and in the medieval and later periods at least, of largely dispersed settlement.

Rippon (e.g. 2006) hypothesised a set of features he named 'infields' (similar to the 'ringdykes' of the rest of north-western Europe) oval features that were the first attempts at reclamation of high saltmarsh after the post-Roman alluviation, perhaps in the 9th or 10th centuries AD. These were frequently associated with the OE place-name element *'worp'* ('worth') meaning 'an enclosed farmstead', mentioned as early as the Dooms of King Ine in the late 7th century (YCCCART2021).



Fig 3: Some of Gilbert's proposed 'infields' in Kingston Seymour (Longworth at lower left)

Gilbert (1996) subsequently tested out this hypothesis in Kingston Seymour, and she came to the conclusion that there were several of these features identifiable in the landscape, one of which was Longworth, of which Rushy Ground forms an element.



Fig 4: Gilbert's 'Longworth' (1996)

Gilbert's suggested infield (the outline is approximately 95% marked on the ground by ditches) is convincing, although this does suggest that either Ham Lane was available to form a boundary at the formation of the 'worth' or that the south boundary of the worth later formed the line of the Lane.

She also associated the 'Longworth/Langworth' field names to the south of Ham Lane with the site, and possibly also the 'Blackey' field names to its south-east, a name often indicative of dark soils implying earlier occupation, both groups names derived from the Kingston Tithe Map and Apportionment 1842/1846 and 1848 'Valuation' (privately owned; copied for YCCCART *per* Jane Bell).

It is interesting to note that the eastern ditch of the proposed worth in fact runs under Ham Lane (and its crossing is marked by the characteristic small triangular space beside the road often occurring in such cases, which can also be clearly seen further along at Ham Gout, and is presumably for access for watering stock).

Kingston is recorded as two separate manors in Domesday (1086), and implied to be a wealthy pair of manors with well-developed arable functions. This is perhaps slightly surprising, given its exceptionally low-lying status, with the potential for winter waterlogging, but it should be remembered that Europe (including Iceland and Greenland) enjoyed a warmer climate during the periods (approx) 950-1250AD, during which, for example, arable crops were grown on Mendip, otherwise not possible until the rise of modern agriculture and cultivars (Mann et al 2009).

At Kingston and most of the Northmarsh, the beginning of this warm period would have coincided with the final end of the post-Roman alluvial deposition (and makes the early 10th century transfer of Kingston to a different Hundred perhaps more understandable).

As temperatures fell and precipitation increased into the Little Ice Age, which really did not finish until the mid-19th century, low-lying alluvial land became less viable for arable, and then for pastoral farming: the eventual local response to this was the digging of gripes (groups of shallow, usually parallel surface ditchlets, to drain water more effectively into the adjacent ditches). While these are currently not easily datable, maps in (for example, the Duchy Record Office in London, featuring West Harptree), show the latest and usually, smallest, gripes: earlier ones seem to have been larger, individual and easily mistaken for ditches.



Fig 5: Land NW of Kingston village, showing gripes in every field

Most of Kingston is covered with gripes of various dates: it is easy for these to be mistaken for ridge and furrow by fieldworkers not familiar with the archaeology of Somerset wetlands. They form by far the most notable features in lidar plots or air photographs of such areas (Fig 5 above, for example).



Kingston Seymour - Rushy Ground - SLRM lidar

*Fig 6: LiDAR image of Rushy Ground (centre). Courtesy of Richard Pearson.* © Environment Agency copyright. All rights reserved.

This is certainly the case in Rushy Ground. Although the gripes have been ploughed, they still stand out on lidar (and in winter conditions, are visible on the ground). In Fig 6 above, several different sets of gripes can be seen, some clearly cutting others. The larger, very slightly curved features in the lower right of the Ground, are possibly the ploughed-out remains of orchard earthworks. There are also some very slight indications of underlying features that can be seen in the gradiometer survey (see below). The straight line diagonally crossing the field to the east of Rushy Ground is the track of the WC&P light railway (1897-1940). The land does not seem to have been in Smyth-Pigott ownership in 1784 (SHC DD/MKG/12/3/1) or 1848, so the history of the field and its landuses are more difficult to follow. In 1848, its owner was one Richard Broadribb Sherring, a middling landowner at best (1848 valuation).

Place-names are, unusually, not particularly helpful here. Many field names (from both the Tithe Apportionment of 1846, and the Valuation of 1848) seem to consist of simple names denoting area or ownership (see, e.g. Fig 7 below). 'Bowsher' is a local family name, almost certainly derived from a Hugenot immigrant's 'Bouch(i)er' (Mod E *'butcher'*).



Fig 7: Field names in the area 1846 / 1848

In the period 1897-1940, the Weston, Clevedon and Portishead Light Railway crossed the very tip of the site to its southeast: a little of the track ballast, and surprising amounts of fencing remains in places, but the site of Ham Lane station has left no trace; remains of the crossing of Ham Lane remain in the form of fencing posts at the entrance to Rums Nine Acres, the adjacent field to Rushy Ground.

#### **Survey objectives**

The work at Rushy Ground continued the geophysical survey of the 'Longworth' complex, attempting to understand the archaeology of an 'infield' of this type.

#### Methodology

The survey of the fields was undertaken during the period January to May 2023 by 2 teams from YCCCART using a Bartington 601-2 gradiometer and a Geoscan RM-15 resistivity meter.

The completed surveys were downloaded to TerraSurveyor 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

As stated above, the whole of Kingston parish is covered by the remains of the post-Roman alluviation, lasting from roughly 400-900 AD, and largely the result of the removal or overthrow of Roman sea defences by the end of the 4th century (Rippon 2006).

This involuntary 'rewilding' returned the Northmarsh to saltmarsh or high saltmarsh (not covered by the sea at every tide). While this provides valuable grazing when used with local knowledge and experience (Oosthuizen 2016), long-term settlement is not usual, hence the interest in Kingston, and its seeming agricultural richness as early as the late 11th century AD. Kingston village and church (and hence the recorded priest) implies a settled existence even by the 1060s.

The earlier period is not documentarily recorded, although the 'worth' names and 'infields' (Gilbert 1996) imply activity between the end of the Roman period and the late Saxon period, and any identifiable structures or deposits from this date will be stratified in the post-Roman alluviation, and part of the purpose of these surveys is to look for these traces.

## **Gradiometry survey**



Fig 8: Gradiometry (601) results



Fig 9: Highest and lowest gradiometry responses at Rushy Ground

At first glimpse, there are few comparanda for these results. Looking at the lidar results (Fig 6), little seems to survive as surface earthworks of the detail seen in the gradiometry. Since many areas of Kingston seem to have been ploughed, or ridged to support orchards, at one time or another, this should hardly be surprising.

The results seem irredeemably reminiscent of palaeochannels (blue low magnetic responses), with potential clearance / keeching mounds on their banks (red high magnetic responses).

The point has rightly been made that these results are the opposite of those seen just down the road at Longworth (YCCCART 2023/Y5). This seems to be the response of magnetically altered materials to long periods of hot drought (Longworth) and subsequent cold waterlogging (Rushy Ground), probably resulting from the switching between different ionic forms of iron due to environmental conditions. This is something rarely taken into account in single one-off surveys relating (for example) to planning-related or academic research surveys, especially in alluvial landscapes like Kingston, where such survey is relatively unusual. There is also the effect at Kingston of results apparently showing structures and features within the post-Roman alluviation accumulation, again something seldom examined in such surveys.

All that can be said with any certainty is that the channels represented by the gradiometry are earlier than the present landscape (probably considerably earlier, since they do not seem to respect the lines of the modern landscape at all), and later (by definition) than most of the post-Roman alluvium (see Appendix 1, showing at the corner of this field, is some 5m deep under the topsoil, depths far beyond the reach of either geophysical system).

Whatever is seen in the results (Fig 8, for example) must therefore be in the upper layers of the TFDs, and thus post-Roman and pre-modern in date. Neither is there any obvious correlation between the outline of the proposed 'worth' (assumed to be of pre-(Norman) Conquest date) and the revealed geophysical features: presumably the features are later than the 'worth's, although this could only be realistically understood by geophysical surveys of the adjacent fields, to check the stratigraphic relationship between the features and those of the 'worth's surrounding ditch.

Results across the road in 'Blackey Lands' were far less clear, and didn't show the very obvious channels seen here. While there were some indications of channels (YCCCART 2023), they were far more disrupted than they appear in the current survey. Conversely, at Thornworth (YCCCART2021), the situation looks far more like the current survey, with clear palaeochannels that bear no relation to the current landscape.

In the current state of studies in the post-Roman alluvium, the reasons for these differences are not obvious. Blackey Lands is outside of the accepted area of the 'worth' and south of Ham Lane; there may be differences in historic treatment of the fields, which belonged in the late 18th and 19th centuries to different landowners.

#### The 'Moat' and possible occupation signal



Fig 10: Responses to the midright of Rushy Ground

One area that stands out in the results is a squarish area apparently surrounded by channels, about 35m square, and with a potential entry to its south-east.

At first site, this could be a homestead moat (after all, King Ine's Dooms state that a churl's *worth* must be ditched around: see YCCCART 2021 for discussion).

Resistivity survey (see below) was used to explore this.

Above and to the east of the 'moat', the survey revealed a dappled set of results, of a kind which frequently reflect occupation or industrial activity at the site (but see below). The resistivity survey was extended to also cover this area.

# *Fig 11: Resistivity survey of areas in Fig 10 above*

Unfortunately, the resistivity signals gave no indication of further structures relating to the gradiometry results above. The best that can be said about the 'moat' is that there is no clear evidence from the surveys of any structures on the 'island' part: the potential occupation area similarly showed no evidence of structures.



#### Further elements of the gradiometry survey

Some evidence in the gradiometry results between the main palaeochannel group and the northern hedge of Rushy Ground appeared to form anomalous features: resistivity survey did not clarify this.



Fig 12: Potential structures in north end of field with resistivity survey

Running across the centre of the gradiometry survey (Fig 8) is a narrow signal, recognisable by its central scarlet core, with dark blue side accompaniments.

This is the recognisable line of a pipe buried and probably leading water to a drinking trough. The eastern side of this where it enters the field is probably the reason for the 'occupation' signal.

Apart from one or two dipoles probably due to lost iron fragments like bolts or so on, most of the rest of the variation in the field is the natural response of the alluvial deposits across the site, which seem to characterise responses throughout Kingston.

#### **Recommendations for further work**

It is clear from the comparison of the results at Longworth, Blakey Lands, Thornworth and current that different areas, and possibly different recent weather conditions, may cause fields to respond differently to gradiometry survey. Many more surveys in the Kingston area will be necessary to resolve these questions, but comparing the four areas surveyed so far, it is clear that a previously unknown landscape, potentially of early medieval date, exists in the area.

#### References

1848 valuation	Processed copy of Kingston Tithe Apportionment (in private hands)
Beisley, P. 1996	<i>The Northmarsh of Somerset</i> Weston-super- Mare
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YCCCART 2021	Geophysical surveys at Thornworth, Kingston Seymour Available at <i>ycccart.co.uk/index_htm_files/Kingston</i> %20Seymour%20Geophysical%20Survey %20Thornworth%202021%20Y2%20v %201.pdf
YCCCART 2023	Gradiometer survey at Blackey Lands, Ham Lane, Kingston Seymour at <i>ycccart.co.uk</i>

#### Authors

Vince Russett with Chris Short **Date** 2023-10-11



#### Appendix 1: Borehole results, Ham lane, Kingston Seymour

This (simplified) profile (from 1961) shows the depth of TFDs, with grey alluvial clay down to 5.5m, where peat occurs. Borehole terminated at 6.1m deep (-0.8m AOD)

## **Appendix 2: Day Sheets**

### Gradiometer

## Grid layout

Su	rvey area	notes	5		readings	
		size	walk direction	may	min	mean
Date	Grid number	1				
26/01/2023	Setting	out base line and gri	ds for base line a	and first th	ree rows	
	1	30 x 30	N	+38.0	-17.2	+5.9
	2	30 x 30	N	+49.6	-21.0	+5.6
	3	30 x 30	N	+99.8	-100	+6.5
02/02/2023	1	30 x 30	N	+14.3	-7.5	+1.1
	2	30 x 30	N	+47.1	-28.7	+1.1
	3	30 x 30	N	+24.4	-59.3	+1.8
	4	30 x 30	N	+35.8	-19.8	+2.4
	5	30 x 30	N	+100	-83.4	+2.6
09/02/2023	1 - void	30 x 30	N	+37.0	-69.4	+4.0
	2- void	30 x 30	N	+70.0	-36.0	+7.0
	3	30 x 30	N	+58.8	-9.3	+34.0
	4	30 x 30	N	+80.1	-30	+34.3
	5	30 x 30	N	+44.4	+21.4	+34.6
	6	30 x 30	N	+55.5	+0.5	+35.0
16/02/2023	Ť	30 x 30	N	+11.5	-261	+0.5
	2	30 x 30	N	+20.8	-16.2	+0.8
	3	30 x 30	N	+10.8	-7.5	+0.2
	4	30 x 30	N	+5.2	-30.8	+0.3
	5	30 x 30	N	+69.7	-70.9	+1.0
	6	Dartial mire in	N	+0.5	-100	-7.4
	ľ	hedge	-1		-100	-2.1
23/02/2023	1	30 x 30	N	+52.5	-23.9	-3.2
	2	30 x 30	N	+22.2	-50.4	-2.9
	3	30 x 30	N	+70.0	-36.7	-2.5
	4	30 x 30	N	+12.6	-19.8	-0.9
	5	30 x 30	N	+37.2	-96.3	+0.7
	6	Partial wire in	N	+40.2	-100	-3.6
	-	hedge				
02/03/2023	1	30 x 30	N	+67.9	-18.6	+0.5
	2	30 x 30	N	+100	-64.4	+1.1
	3	30 x 30	N	+100	-36.1	+0.6
	4	30 x 30	N	+19.3	-27.8	+0.4
	5	30 x 30	N	+51.2	-32.6	+0.7
	6	Partial wire in	N	+6.2	-14.5	+0.6
		hedge				
	7	Partial M & R	N	+97.1	-43.8	+2.5
	8	30 x 30	N	+21.0	-43.0	+1.7
	9	30 x 30	N	+14.2	-6.9	+2.6
20/04/2023	1	30 x 30	N	+15.1	-20.7	+1.1
	2	Partial M & R	N	+32.7	-8.8	+1.9
	3	30 x 30	N	+19.0	-60.0	+3.3
	4	30 x 30	N	+13.4	-47.8	+3.5
	5	Partial M & R	N	+17.1	-2.0	+3.5
	6	Partial M & R	N	+7.4	+0.1	+3.8
	7	Partial M & R	N	+7.0	-50.1	+2.2
	1	Partial M & R	S	+45.5	-31.0	-7.7
	2	Partial M & R	S	+69.7	-76.2	-6.9
	3	Partial M & R	s	-11	-14.1	-77
	4	Partial M & P		+21.8	-33.3	-75
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St	uvey area	notes	5		readings	i
		size	walk direction	may	min	mean
Date	Grid number					
	5	Partial M & R	s	+3.5	-15.5	-7.3
	6	Partial, M & R from trav, 7. Repeat grid, wire in fence	N	+76.9	-99.7	-3.9



Location A – 17.10m from single paint spot on water butt to south & 16.10m from two paint spots on hedge trunk to north side of opening to adjoining field Location F – 17.10m from single paint spot on north gate post & 28.65m from two paint spots on south gate post

Quiet spot -

33.27 m to one paint spot on north gate post of field entrance from lane 33.47m to two paint spots on south gate post of field entrance from lane GPS E338411.58, N166861.52



## **Terrasurveyor Grids**

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#### Resistivity

Grids and grid layout

Date	Number of grids	Grid size	Direction of survey
27 APRIL 2023	2	20x20m	N
11 MAY 2023	2	20x20m Grid 2 partial. End line missing (hedge)	N



#### Start point grid 1 is indicated on 601 grids below



#### Terrasurveyor grids



## Resistivity

## Site 2

Grid Layout

Date	Number of grids	Grid size	Direction of survey
6 JULY 023	2	20x20m	E



Start Point for RM15. Survey East Red 601 grids Blue RM15 grids



## TerraSurveyor grids

