



Ridley Hall, Cambridge, Cambridgeshire Report

In December 2009 Archaeology RheeSearch Group carried out magnetometry and resistivity surveys on this site.

Members participating: Pat Davies, Bruce Milner, Liz Livingstone, Ian Sanderson, Gill Shapland.

Site liaison: Suzanne Thompson.

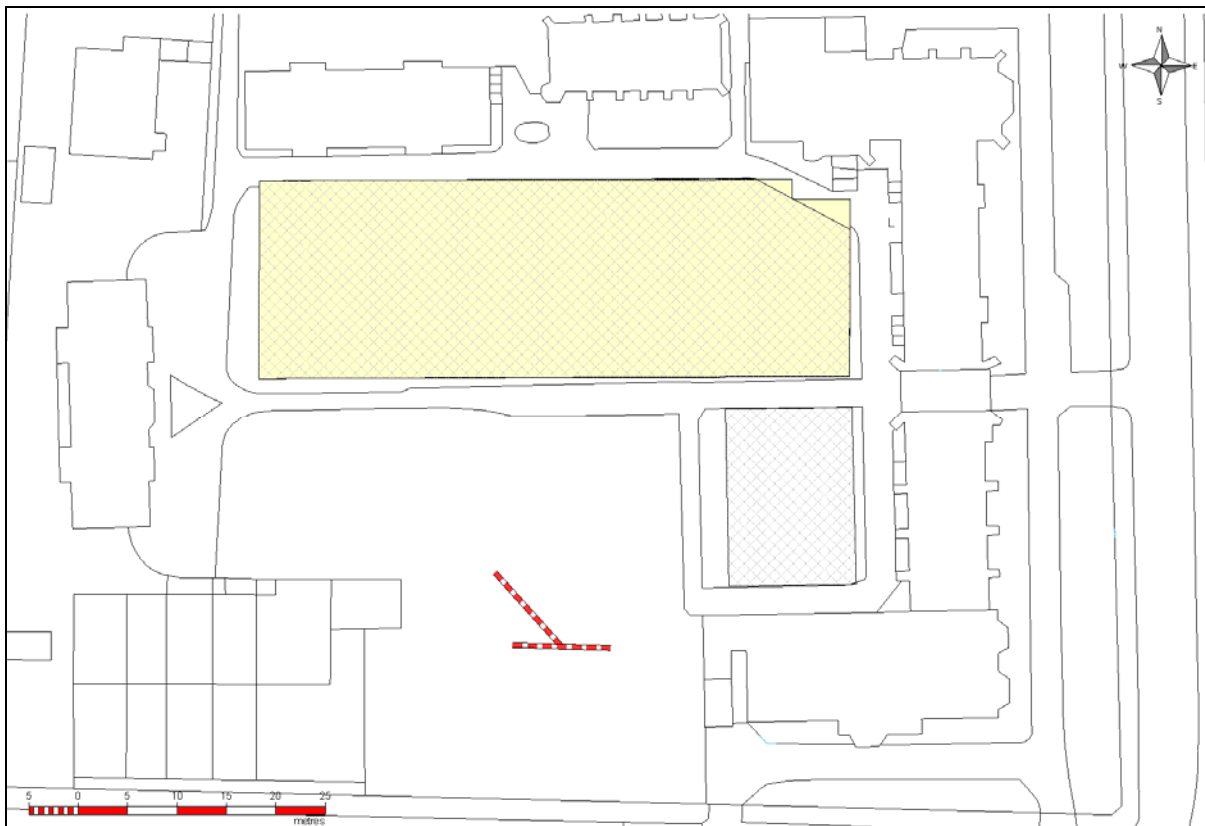
Site conditions: Lawn and orchard. Rain before and during surveying.

Equipment: Bartington 601 gradiometer; TRCIA 50 cm twin probe

Area covered:

Magnetometry	three 20 m × 20 m grids
Resistivity	three 20 m × 20 m grids, one 13 m × 18 m grid
Wenner	two sections each of 30 probes at 0.5 m

Location: TL443578, Ridley Hall, Cambridge, Cambs.



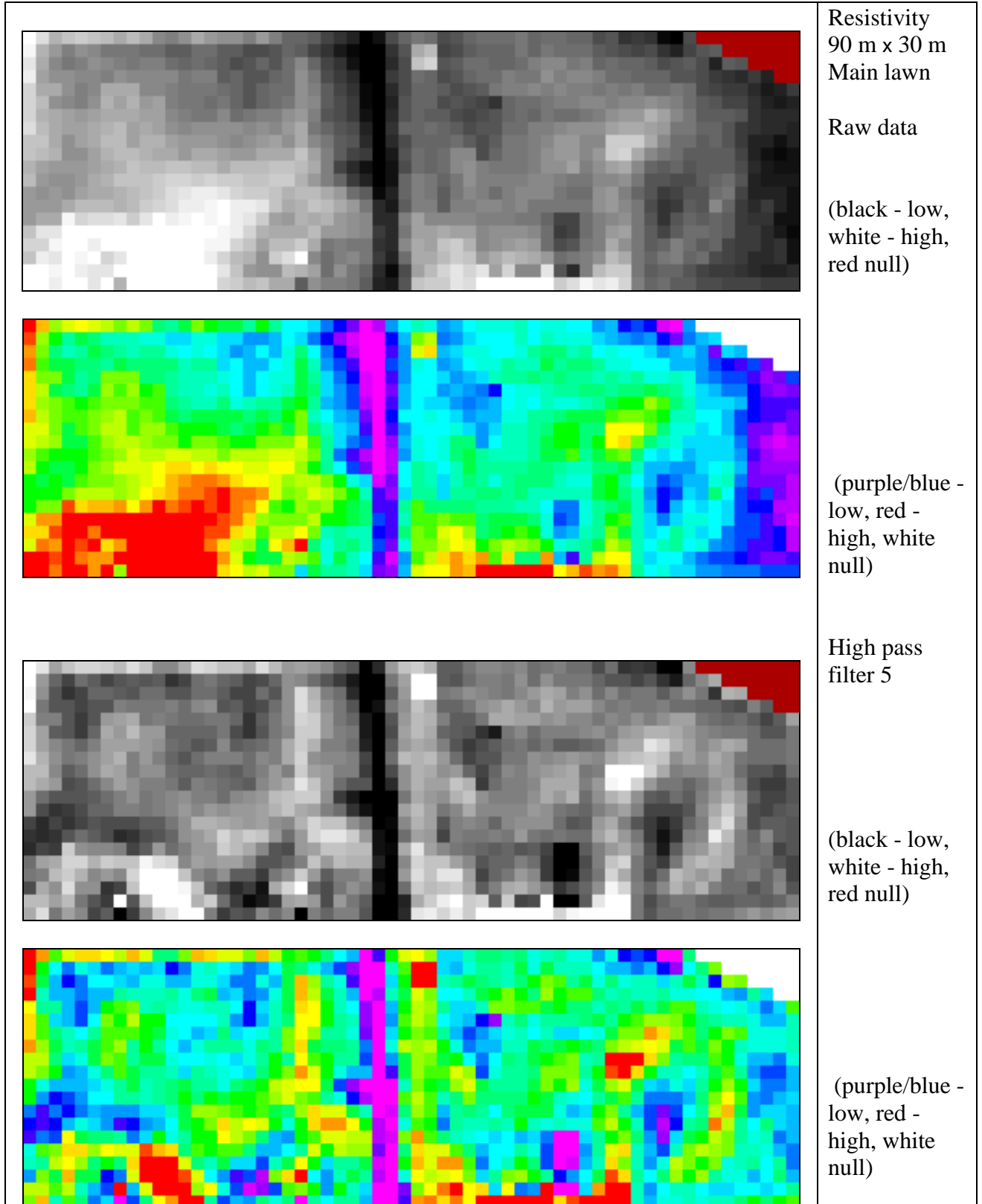
Location plan: Survey areas.

(resistivity survey area hatched, magnetometry area solid,
Wenner sections red dashed lines).

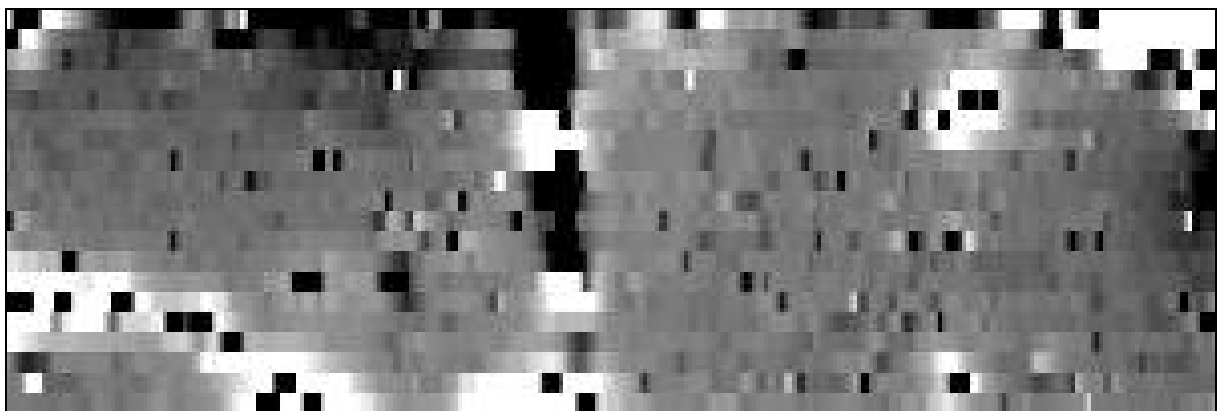
Purpose of survey: To determine if any sub surface features could be detected.

Results:

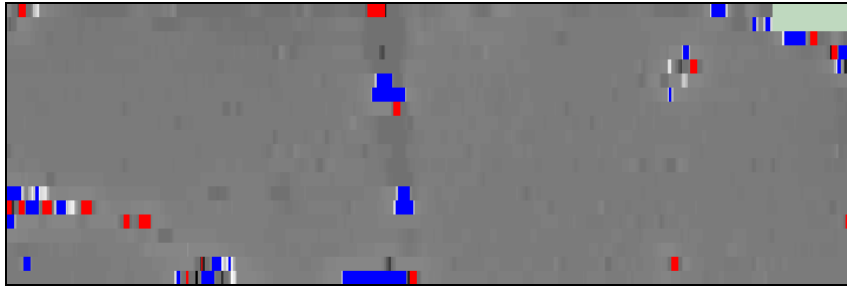
The images in this section are orientated for presentation. However, grid north is not appreciably different from the top of the page. They are not to a common scale.



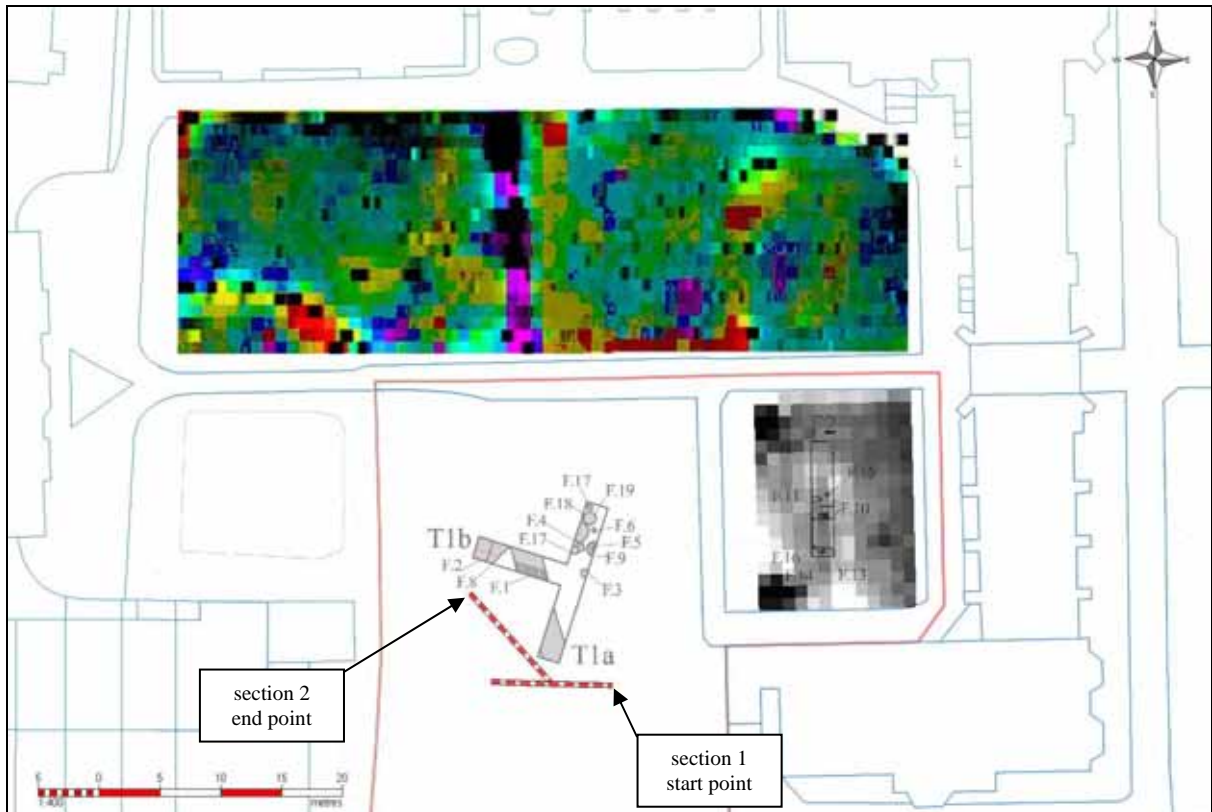
<p>Resistivity Side lawn 13 m x 18 m</p> <p>Raw data</p>		
<p>High pass filter 5</p>		
	<p>(black - low, white - high, red null)</p>	<p>(purple/blue - low, red - high, white null)</p>



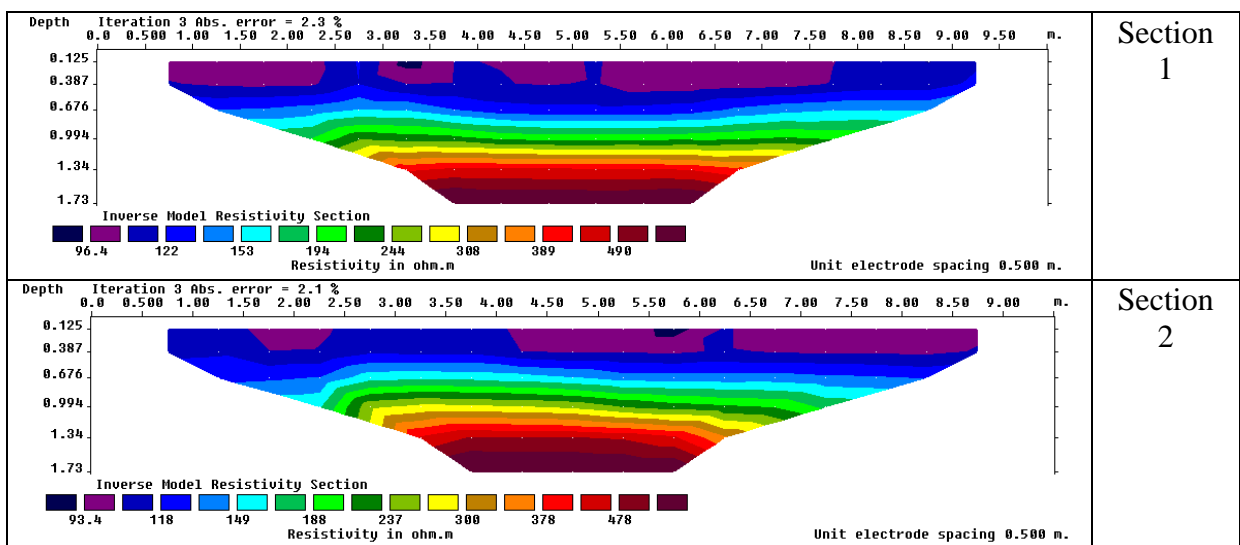
Magnetometry 90 m x 30 m range ± 80 nT
(black - high, white - low)



Over range (3000 nT) magnetic signals (red +, blue -)



Magnetometry and resistivity results superimposed in context with the trench plan from the excavation described in Brittain (2009)





Resistivity

The resistivity results from the main lawn show a marked line of low values running N-S bisecting the lawn. This line is bracketed by regions of slightly higher resistance. A narrow band of high resistance follows the W edge of the survey area and there is a large area of high resistance in the SW corner of the lawn. Another narrow band of high resistance occurs along the S edge of the lawn to the E of the N-S low resistance feature.

The resistivity results on the smaller area show small areas of low resistance on both the NW and SW corners, a narrow band of high resistance on the N edge and patches of high resistance on the S and W edges. In addition there is an anomaly extending about 10 m N from the S area of high resistance and a small patch of low resistance 3 m from the E edge and 6 m from the S edge.

Magnetometry

This site was not particularly suitable for magnetometry due to the high levels of interference, which meant that any weaker signals were not distinguishable from the background. Two intense features were located despite the noise, one line running N-S and the other curving across the SW corner of the survey area. Both lines included out of range responses characteristic of ferrous components.

Wenner sections.

Normally Wenner sections are positioned with reference to a planar resistivity survey. Due to time constraints these sections were positioned solely on the basis of visible ground disturbance attributable to the excavations described in Brittain (2009).

Discussion:

The principal feature in these surveys is undoubtedly the line bisecting the main lawn. This feature and the one in the SW corner of the main lawn gave magnetic signals characteristic of service pipes. The central low resistance line with higher values on either side seen in the resistivity results indicates that the pipe channel accumulates water from the surrounding soil. This pipe probably changes direction or stops between the main lawn and the excavation trenches, where it should otherwise have been found.

It is possible that this bisection line may also be coincident with some of the mid 19th century garden boundaries shown on map of 1821 and the 1836 survey made for a railway which was never built (below). There does appear to be a slight increase in the width of the S part of this line, with suggestions of a right angle turn to the W at the centre, best seen in the coloured, filtered image above which would appear to match part of one of the garden boundaries. It may be that when the pipe trench was dug the trench side was unstable close to these foundations and had to be widened. The location of these plans in relation to current structures is approximate as most of the features suitable for referencing positions have been altered or destroyed: the overlays given below are the best that can be achieved.

The pipe in the SW corner of the main lawn gave a slightly weaker magnetic signal than the other pipe and a variable resistance response. The resistivity results were probably affected by tree roots over this portion of the survey area.

Other features in the resistivity results from the main lawn also approximate to structures shown on the 1821 and 1836 records. A small band of high resistance readings follows the N

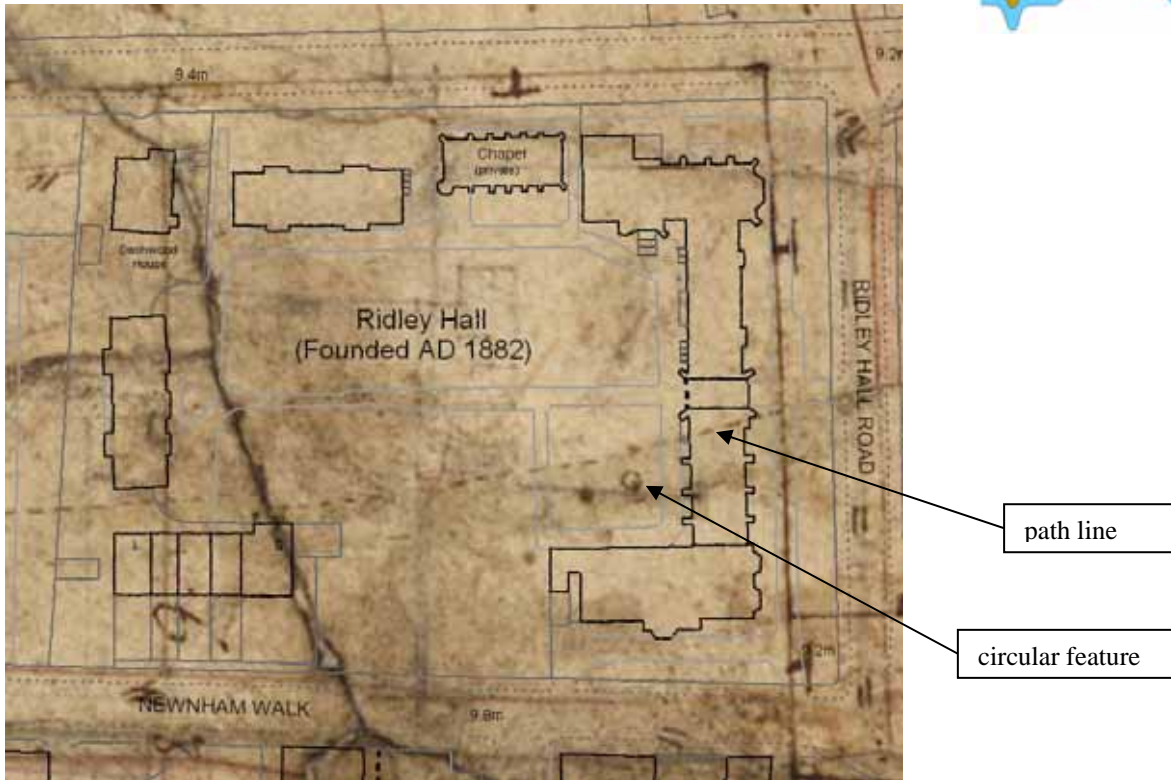


edge of structure A on the 1836 plan, and a marked cluster of low resistance values corresponds to structure B. The high resistance values along the S edge to the east of the N-S line may be associated with structure C but there is insufficient pattern to be other than speculation. The magnetometry background was too high to be able to distinguish any of these structures although two responses do correspond to the N edge of structure A.

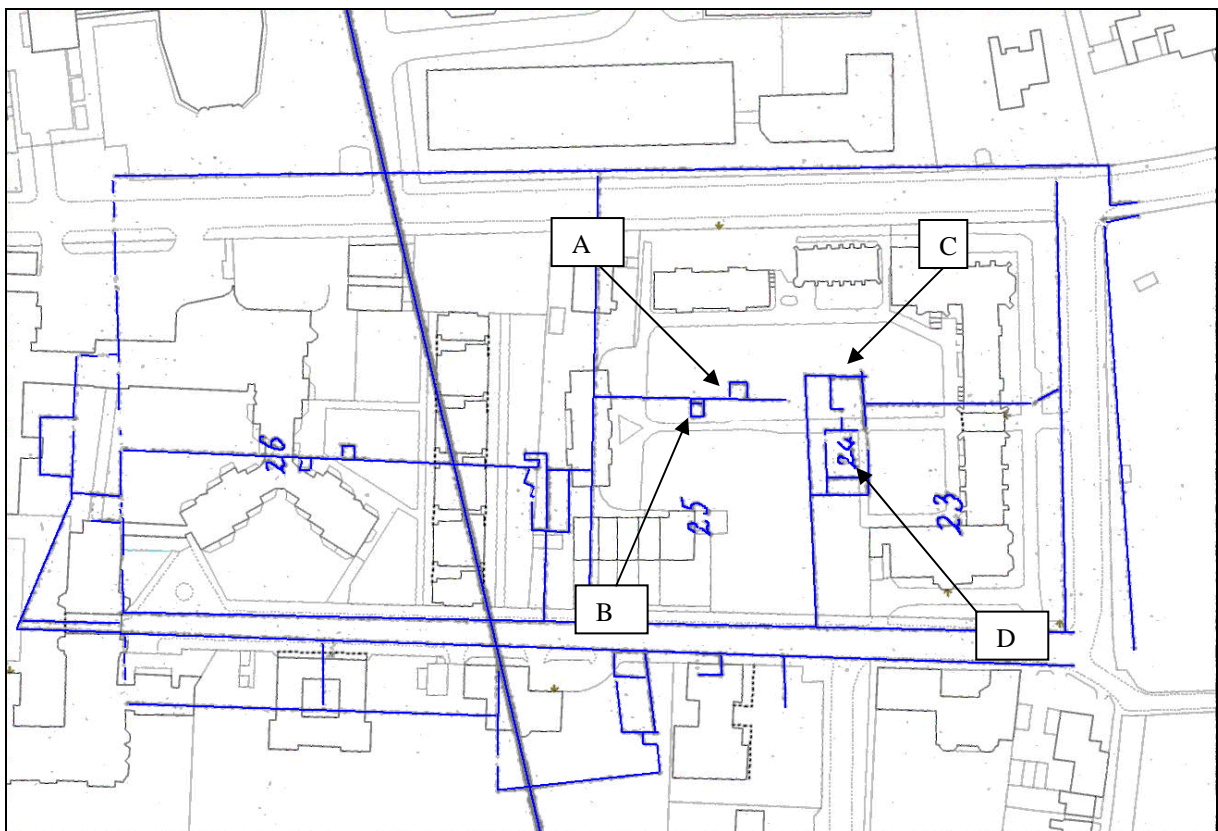
The Wenner results show a series of fairly shallow indentations about 40 cm deep crossing the survey lines. Without a planar resistivity survey it is impossible to estimate direction as some of the wider responses might be partially along a feature. The narrowest, at about 70 cm, may be nearest to normal to the direction of the indented feature. It is possible that the indentations represent pits rather than linear features.

The side lawn was too small to recognise any large patterns in the results. The high resistance on the N edge was almost certainly associated with the adjacent path. The high resistance signals in the NW corner were probably caused by a tree. The low resistance there was surprising but may be due to soil conditioning as a result of underplanting or the removal of an earlier tree, and the same may be true for the SW corner. The high resistance response part way down the W edge approximates to the corner of the structure (D) shown on the 1821 and 1836 plans, but the accuracy of any superimposed plan should be considered with caution. The high resistance area along the S edge to the E of the N-S low resistance feature may give the extent of Trench 2 context F13 in Brittain (2009), described as "A compact mid yellowish white friable concrete deposit. Thickness 0.06m.". The low resistance area 3 m W and 6 m N of the SE corner corresponds to a feature on the 1802 map (below), possibly a well.

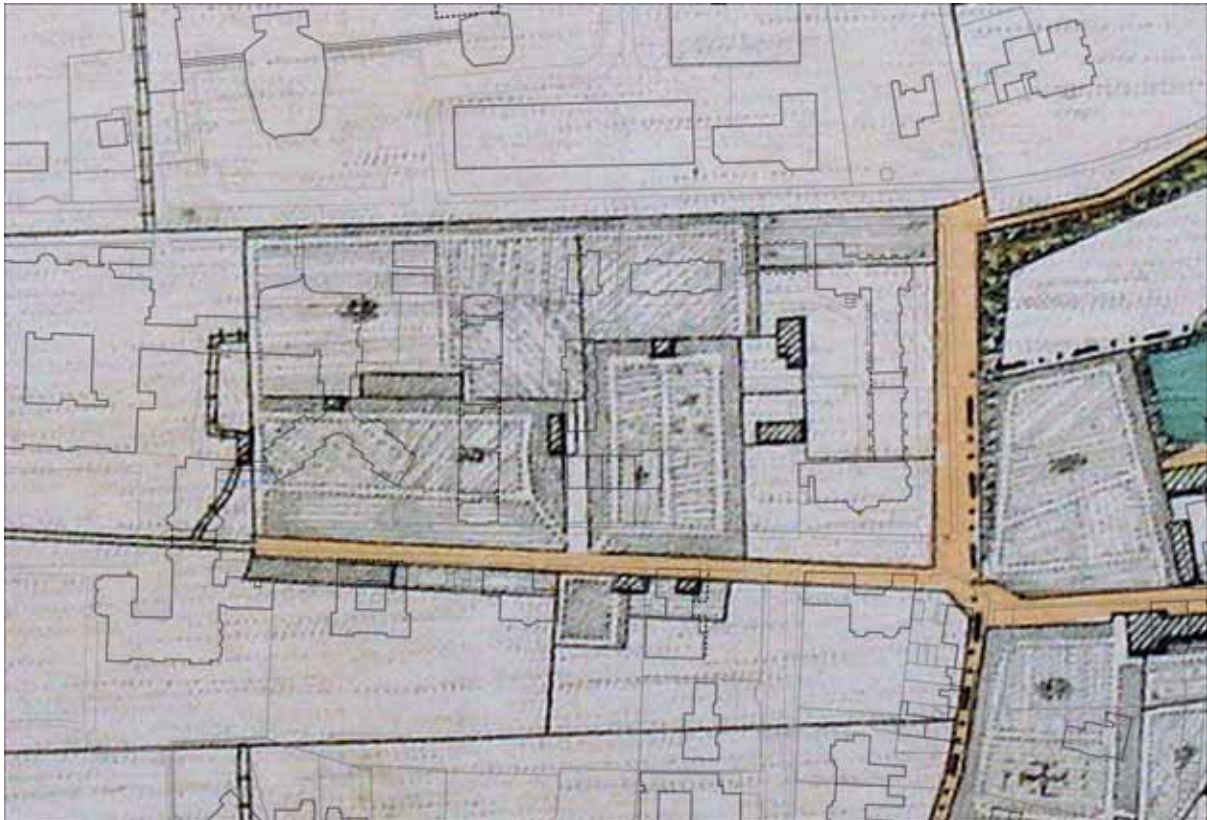
The dashed line on the 1802 map did not correspond to any of the resistivity responses. The high resistivity point towards the centre of the small lawn would be where one might expect to find the base for a garden feature.



c 1802 St. Giles Draft Inclosure plan superimposed on a modern plan.



1836 Railway plan superimposed on a modern plan.



1821 Baker's map of Cambridge superimposed on a modern plan.

1802, 1821 & 1836 plans courtesy of Cambridgeshire Archives.

Conclusion

As expected the magnetometry was limited by the environmental noise but it did identify two pipelines across the main lawn. Resistivity identified one of the same pipelines and possible traces of structures given on earlier maps. Several possible features were located but the area covered was insufficient for recognisable patterns to be obtained and any conclusion must therefore be considered speculative. It was impossible to relate the vertical sections to the excavation report, but this study indicates that several shallow ditches about 40 cm deep cross the area.

Raw data are available as separate appendices.
Magnetometry readings: 8/m, 1 m separation.
Resistivity readings: 1 m interval, 1 m separation.

Reference: Ridley Hall, Cambridge. An Archaeological Evaluation
by Marcus Brittain, Cambridge Archaeological Unit Report No. 905, October 2009

Report by Dr I Sanderson for Archaeology RheeSearch