

**A Resistivity Survey Commissioned by The Friends of Court Hey**

**Survey carried out by Ron Gurney**

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**A resistivity survey on the site of Court Hey Hall  
Nov. 2007**

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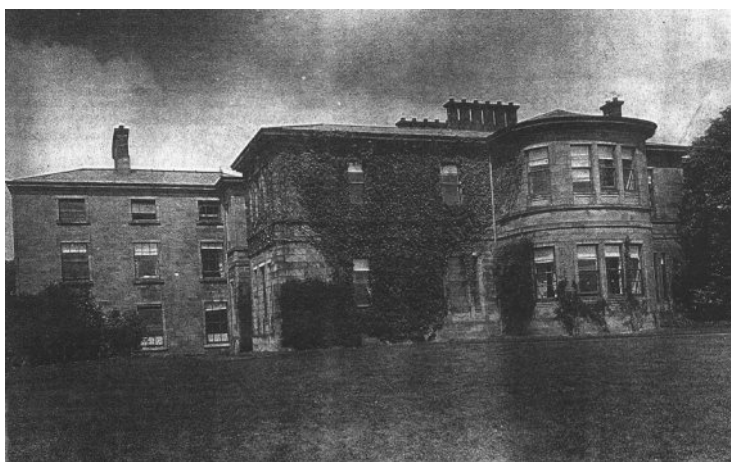
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**Fig.1 Court Hey Hall viewed from the east**  
(Courtesy of <http://web.ukonline.co.uk/court.heyark2/history/history1.htm>)

## **Introduction**

### **NGR**

Centred on SJ 419901

### **Location and Topography**

The survey was carried out on 5/11/07 in an open park area to the north of the sunken garden feature and to the east of the rear of the National Wildflower Centre building. The area is relatively flat with short grass covering approx. 2000sq.m. and surrounded by established trees and shrubberies.

### **Archaeological Background**

The geophysical survey area was concentrated mainly on the eastern side of this area, which from the first edition 25" O.S. map produced in 1893 (Fig. 3) indicated the approximate location of the site of Court Hey Hall. This impressive hall was built by Robertson Gladstone, the elder brother of William Gladstone, in 1836 and remained the family's main residence until the death of his son Walter in 1919. The hall and estate were then purchased by J. Bibby and Sons a cattle food manufacturer who established an experimental poultry and cattle foods farm and developed the park as a centre for sport and recreation. During the Second World War the Ministry of Agriculture Fisheries and Foods requisitioned part of the estate as a quarantine station but after the war the hall and grounds fell into disrepair and in 1951 the company sold the estate to Huyton-with-Roby Council. The hall was demolished in 1956 and part of the land sold to Vernons Pools. The area once occupied by the hall now forms Court Hey Park and houses the National Wildflower Centre and the offices of Knowsley Metropolitan Borough council.

## **Aims of Survey**

The aim of this resistivity survey was to investigate the accessible area to the east of the National Wildflower Centre where the first edition O.S. map produced in 1893 indicated that the eastern side of the building stood. The identification of geophysical anomalies in this area may well relate to foundations of the hall which may still survive as archaeological deposits and provide assistance to the planning of trenches for a future archaeological investigation

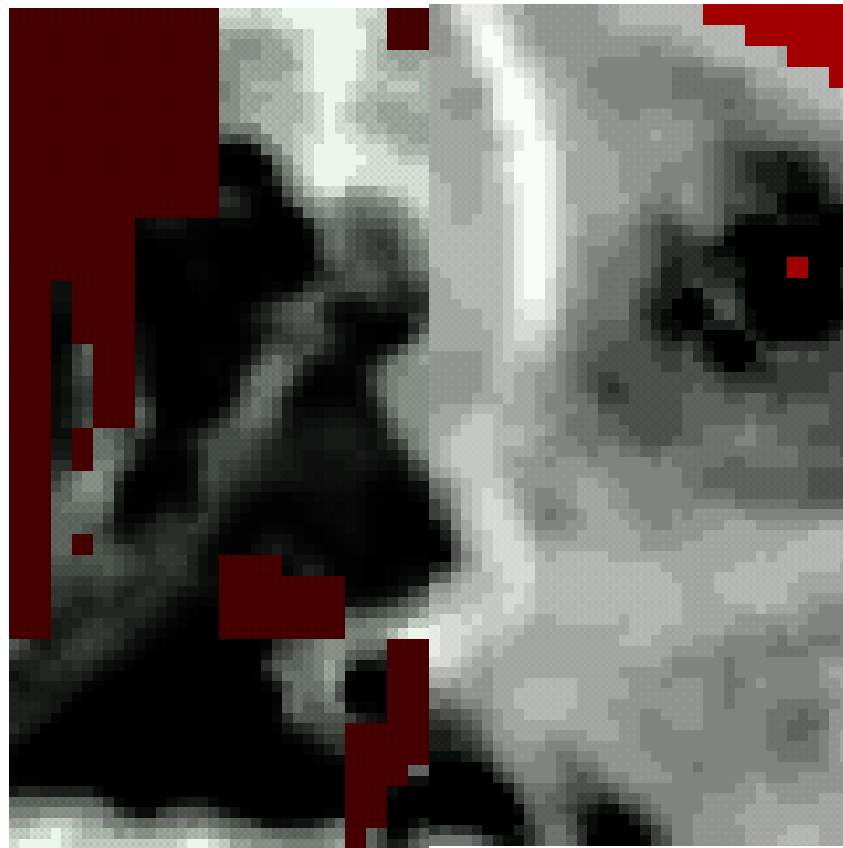
## **Summary of Results**

The results of the survey (fig 2.) revealed a large rectilinear area of high resistance with a semi-circular protrusion on the eastern edge, which correlated with the eastern profile of the main hall building. A linear low resistance anomaly was recorded to the east of this arcing north and away from the building, this corresponds with the line of a path shown on the first edition O.S. map (fig. 3). A further sub-circular high resistance anomaly was recorded east of this below an isolated group of trees and bushes.

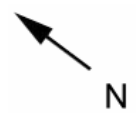
## **Acknowledgements**

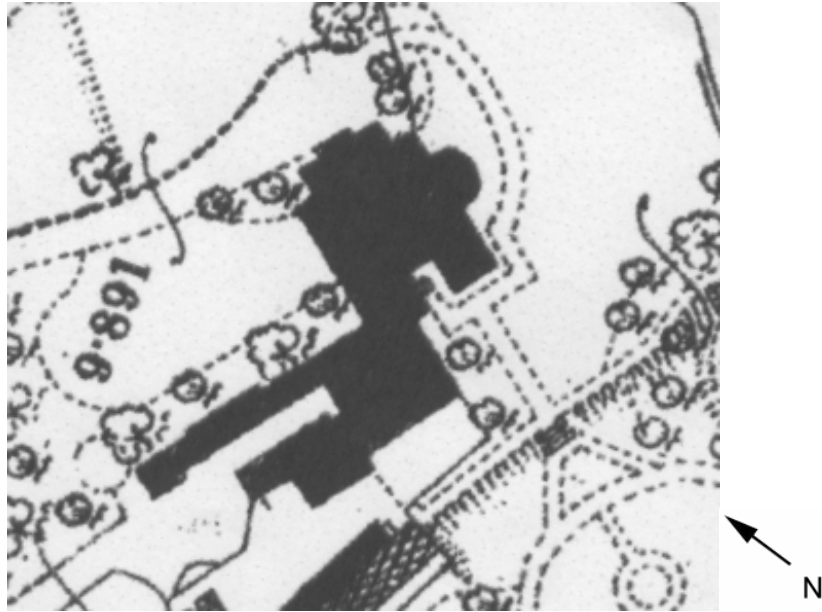
The survey was commissioned by The Friends of Court Hey Park and David Ramsbottom of Knowsley Metropolitan Borough Council, my thanks to Steve Price who assisted on the day and Dr Mark Adams at Liverpool Museums Field Archaeology Dept.

**Survey Results:**

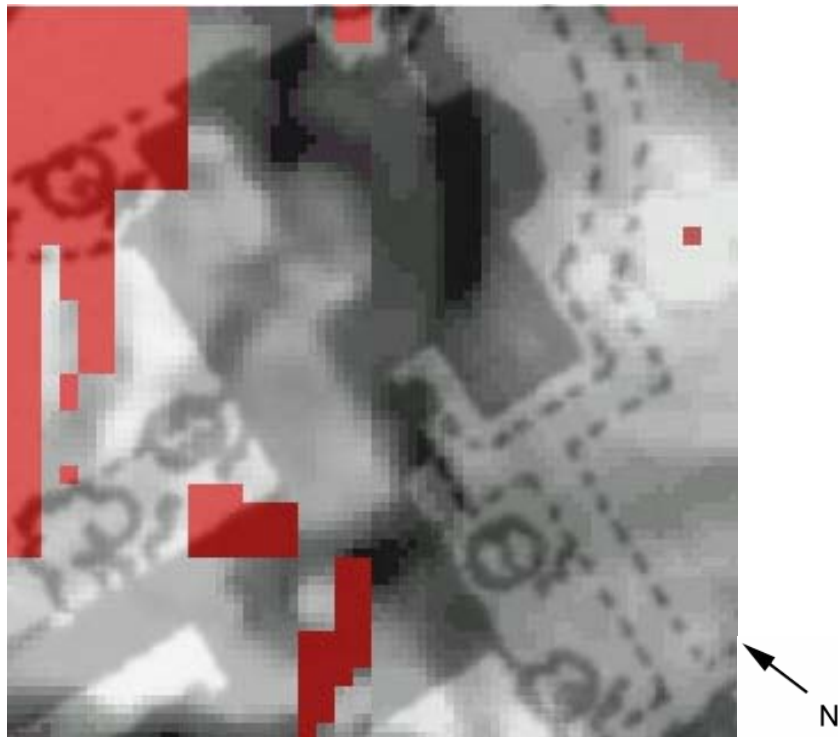


**40m**  
**Fig. 2 Interpolated and merged image of plot**





**Fig. 3 The hall on the first edition O.S**



**Fig. 4 Overlay of map and plot unmatched**

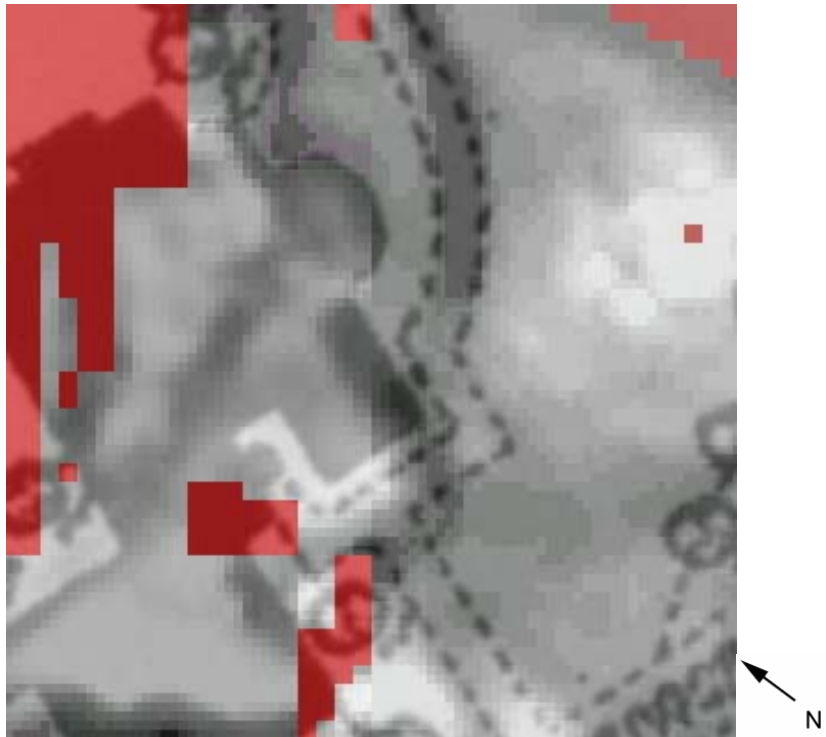


Fig. 5 Overlays matched

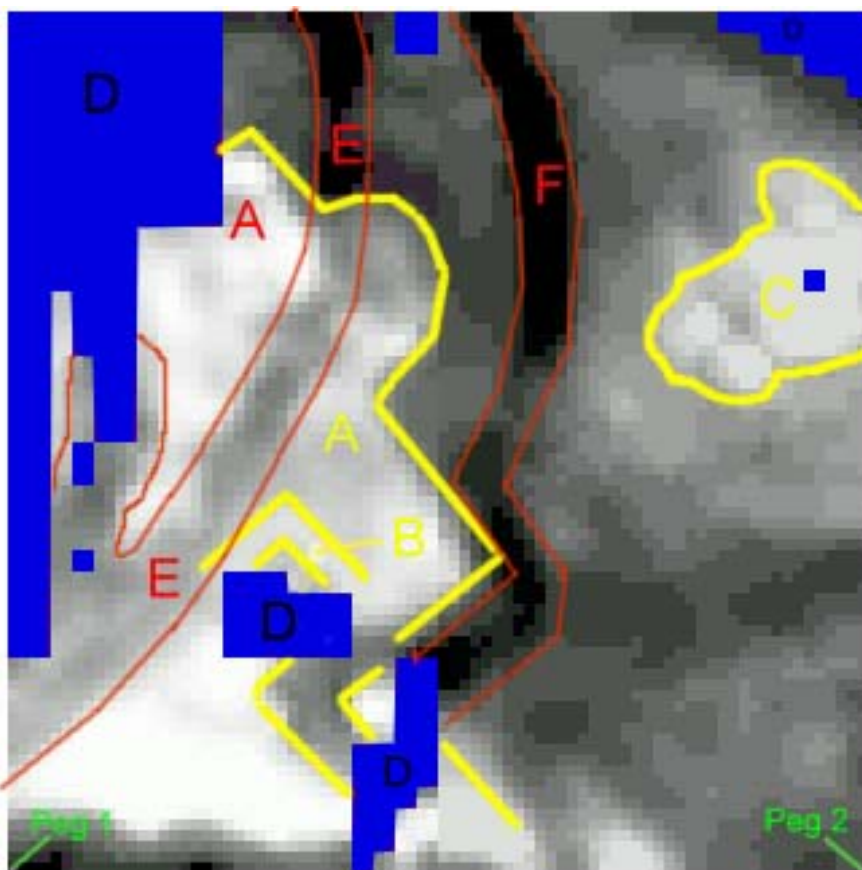
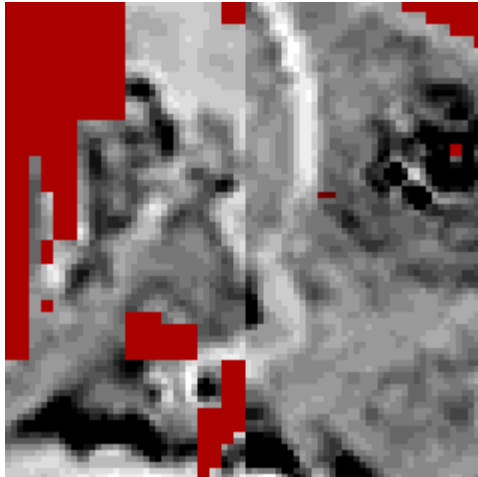


Fig. 6 Inverted plot showing details of areas of high /low resistance



**Fig. 7 A normal size processed image of the plot**

A relatively small plot such as this carried out at a 1m pitch can be problematic when viewing enlarged images. Pixellation tends to detract from the detail of the overall image and as can be seen in Fig.7 the entire image and detail such as the denser walls are easier to see on a smaller image.

### **Methodology**

The survey used seven 10m x 10m grids and two 20m x 20m. The grids were aligned north-east of the a NW-SE running 40m base line established along the most promising and accessible section. Wooden pegs were positioned at the start and finish of this baseline.

PEG 1 S.W. corner SJ 41894  
90071

PEG 2 S.E. corner SJ 41913  
90037

A T.R. Systems resistivity meter was used to collect earth resistance measurements using the twin electrode configuration with a mobile probe separation of 0.5m. Readings were logged at 1m intervals along successive N-S traverses separated by 1m and the data was down-loaded to a laptop. The twin electrode array is particularly well suited to archaeological targets and measures the earth resistance of the volume of ground immediately below the mobile current-potential probes with the addition of a constant, and thus negligible contribution from the remote current-potential electrodes

A greyscale plot was produced using TR systems software and snuffler geophysics software (see figure 2).

### **Area**

Area covered by survey in total equated to 1500 sq.m.

## **Results**

The survey showed evidence of both high and low resistance anomalies. High resistance is recorded over stonework, foundations and compacted material that fails to retain moisture. Low resistance readings indicate the presence of disturbed soil and anomalies where moisture is retained such as ditches, pits etc. Results are often not definitive and the geology of the survey area must be taken into account as natural occurring features can often be mistaken for man made archaeology.

In figure 6 high resistance anomalies are indicated in red and low resistance in yellow. Anomaly A, located in the south western side of the survey area consisted of a concentrated area of high resistance readings with a definite eastern edge most likely indicating an area of rubble/compacted stonework /masonry (building footprint). Within this, to the southern end a further high resistance linear anomaly B forming a right angle may indicate the presence of an internal wall. A large sub-circular high resistance anomaly C was recorded to the east of these. D coloured blue indicates areas where readings were unobtainable. The profile of the southern corner of anomaly A is mirrored slightly to the east by a linear low resistance anomaly F, which then turns east and arcs north away from the edge of A. Finally a curvilinear low resistance anomaly E cuts through eastern edge of anomaly A arcing west. This appears to be a later disturbance and runs near a visible manhole cover at the northern edge of the plot, indicating a possible service trench.

## **Conclusion**

The resistivity survey undertaken within this area has revealed, without doubt, the foundations of the eastern profile of the main hall building along with the arcing path that ran around the eastern perimeter of the building to the turning area of the main drive. The level of correlation between the map data and the geophysics was extremely high (see overlays Figs.4 & 5) The large sub-circular high resistance anomaly to the east of the path is not represented on the map data and may be a dump of demolition material or possibly the remains of a garden structure connected with the hall but would worthwhile investigating during the proposed excavation. Although weather conditions on the survey day were far from ideal with rain causing fluctuating moisture levels, the results are a testament to the stability and recording quality of the TR equipment.

## **Technical Information**

### **Principles of Resistivity**

Electrical conduction in the soil is proportional to the concentration of dissolved ions it contains which is itself largely proportional to the overall water content present at the time of the survey. Local variations in the subsurface resistivity are thus determined by contrasts in moisture retention between buried archaeological features and the surrounding soil. For example, non-porous stone wall footings will retain less

moisture than the surrounding soil and will result in a high resistance anomaly; conversely a ditch silted with a combination of topsoil sediment and organic humus will produce a water-retaining low resistance anomaly. The resistivity survey emulates a naturally occurring phenomenon known as crop marks where features appear in the landscape by differential crop growth when viewed from above

## Equipment

TR Systems resistivity meter  
Twin probe array  
Mobile probe separation 0.5 m  
Max. Output Voltage 40v  
Operating Frequency 137Hz Software  
Datalogger Capacity 15,000 readings  
TR geophysics software  
Snuffler geophysics software

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**Fig.8** A low resolution aerial view of the site with plot overlay