

Ram Hill Geophysical Survey

The following investigation was carried out in 2006 on the site of Ram Hill Colliery an important archaeological mining site in South Gloucestershire.

Ram Hill

a geophysical survey



2006

Archaeological Report No. 8

M. Martin * J. Martin * A. Jackson

SAGASCAN

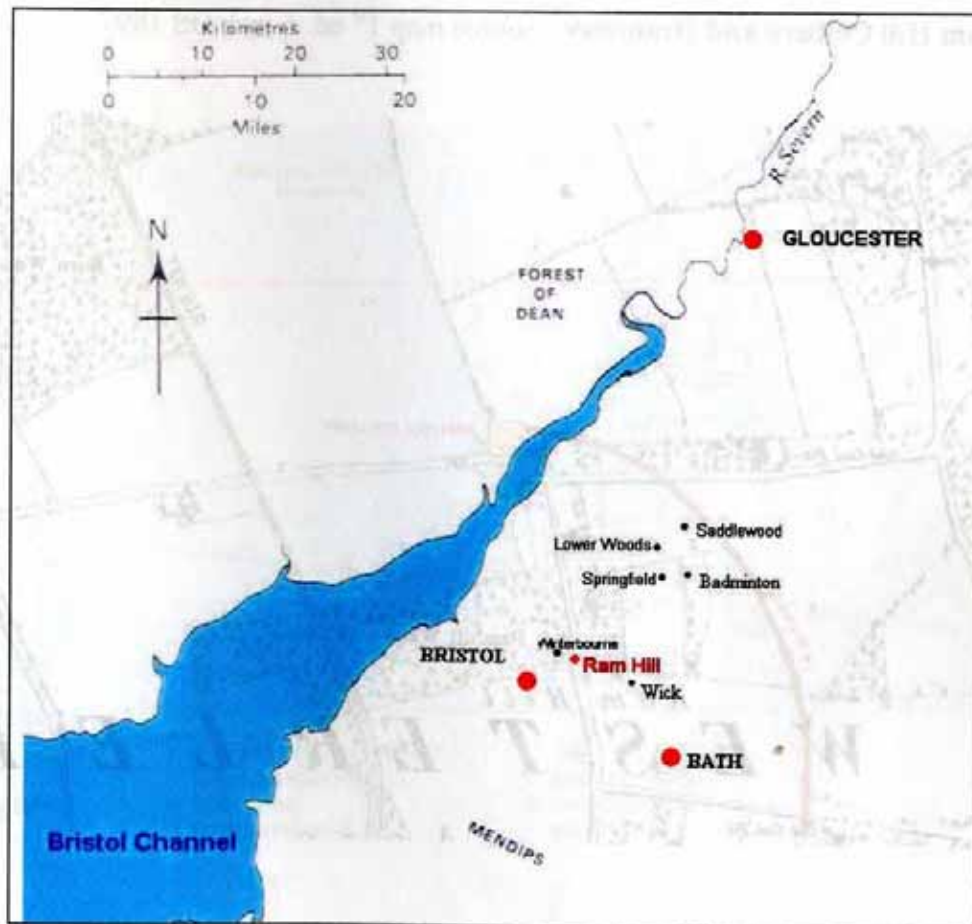
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Introduction

The following investigation was carried out on 21st February 2006 at the request of David Evans on behalf of South Gloucestershire Council. A small geophysical survey (resistance) was undertaken on the site of the old Ram Hill Colliery (SMR 5903).

The surveyed area is located 12 kilometres to the north east of Bristol (Fig. 1). The site itself lies 1 km south east of Coalpit Heath (OS ST 679802) and adjoins the southern edge of the main railway line from London to South Wales.

Figure 1 Location of Survey Site

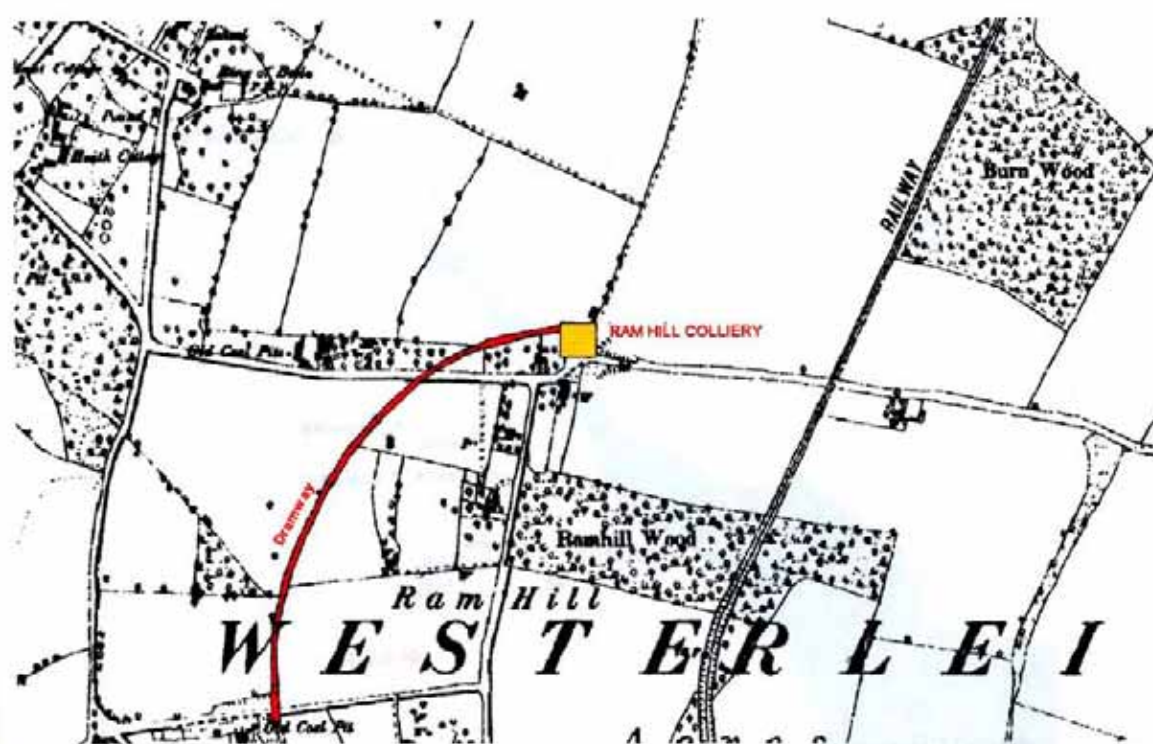


Background

The Coalpit Heath Company opened Ram Hill Colliery in the first half of the nineteenth century, sometime between 1820 and 1830. Initially it was operated by a horse gin but this was later (1847) replaced by a steam (beam-winding) engine. It was closed sometime in the 1860s. What makes the site important is its state of preservation and its connection with the "dramway". The land upon which the pit is situated was bought by the Great Western Railway but has remained undisturbed by railway construction. In 1828 work began on a horse-drawn railway (the "dramway") to take coal from the area down to wharfs on the River Avon; Ram Hill Colliery was the terminus for this railway. Though later converted to a broader gauge and to steam, the section of line leading to Ram Hill appears to have been abandoned and thus remained unaltered. The site was rediscovered by local archaeologist John Cornwell in 1981 and intermittently excavated, most recently by the "Friends of Ram Hill Colliery" under the guidance of Bridget Hetzel.

In February 2006, Sagascan was invited to attempt to find out more about the site by making a geophysical survey (resistance) over the limited area available for examination.

Figure 2 Ram Hill Colliery and Dramway - source map 1st ed. 6 inch OS 1897.



Methodology

The geophysical survey was undertaken using a twin probe TR/CIA Resistance Meter operating on 1.0 mA at a maximum output voltage of 40V. The weather was showery but soil conditions acceptable for resistance measurements. Approximately 355 square metres were surveyed at half metre intervals on 21st February 2006 and the resistance data have been plotted as a grey scale bitmap image (Fig. 3).

When plotted, resistance survey data appears as a pattern of light (high resistance) and dark (low resistance) patches. The former can indicate manmade features such as the buried foundations of walls, stone drains and hidden surfaces such as floors, hearths or metalled roads. They can just as easily indicate natural subsurface features of the local geology. Darker patches on the plot indicate areas of greater water retention which might be buried or in-filled ditches and pits, robbed out walls or just natural changes in soil depth.

Figure 3 Site Plan of Ram Hill Colliery (South Gloucester Council).

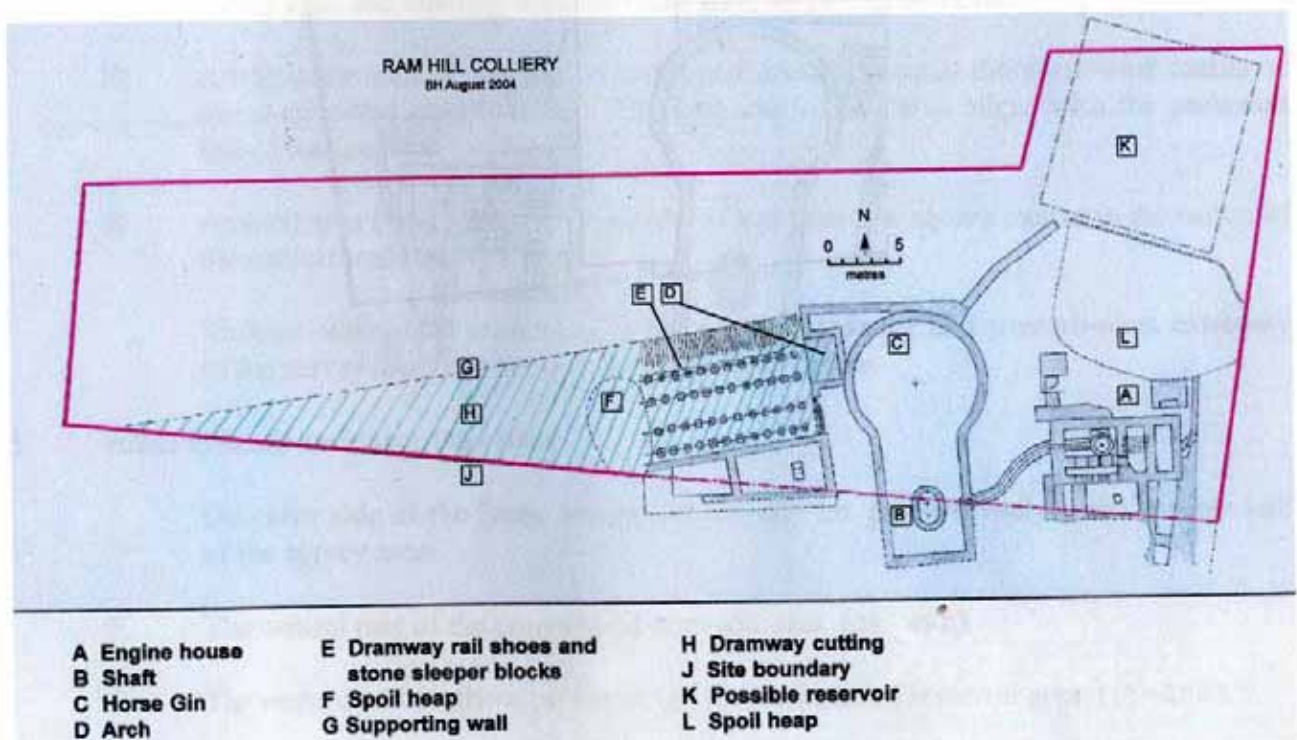
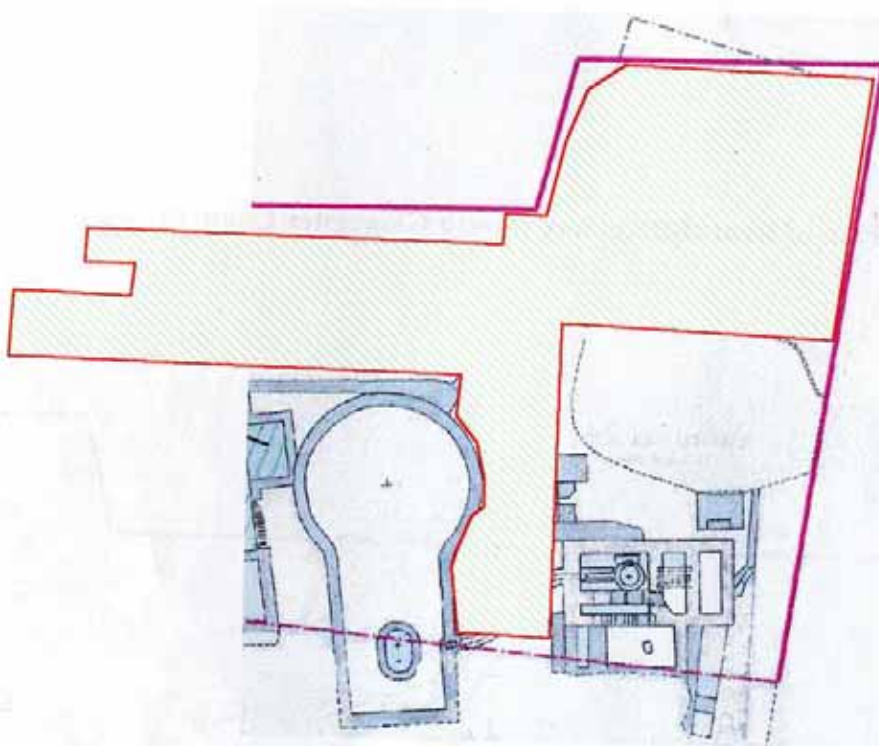


Figure 3a

Surveyed Area



Results

General Description:

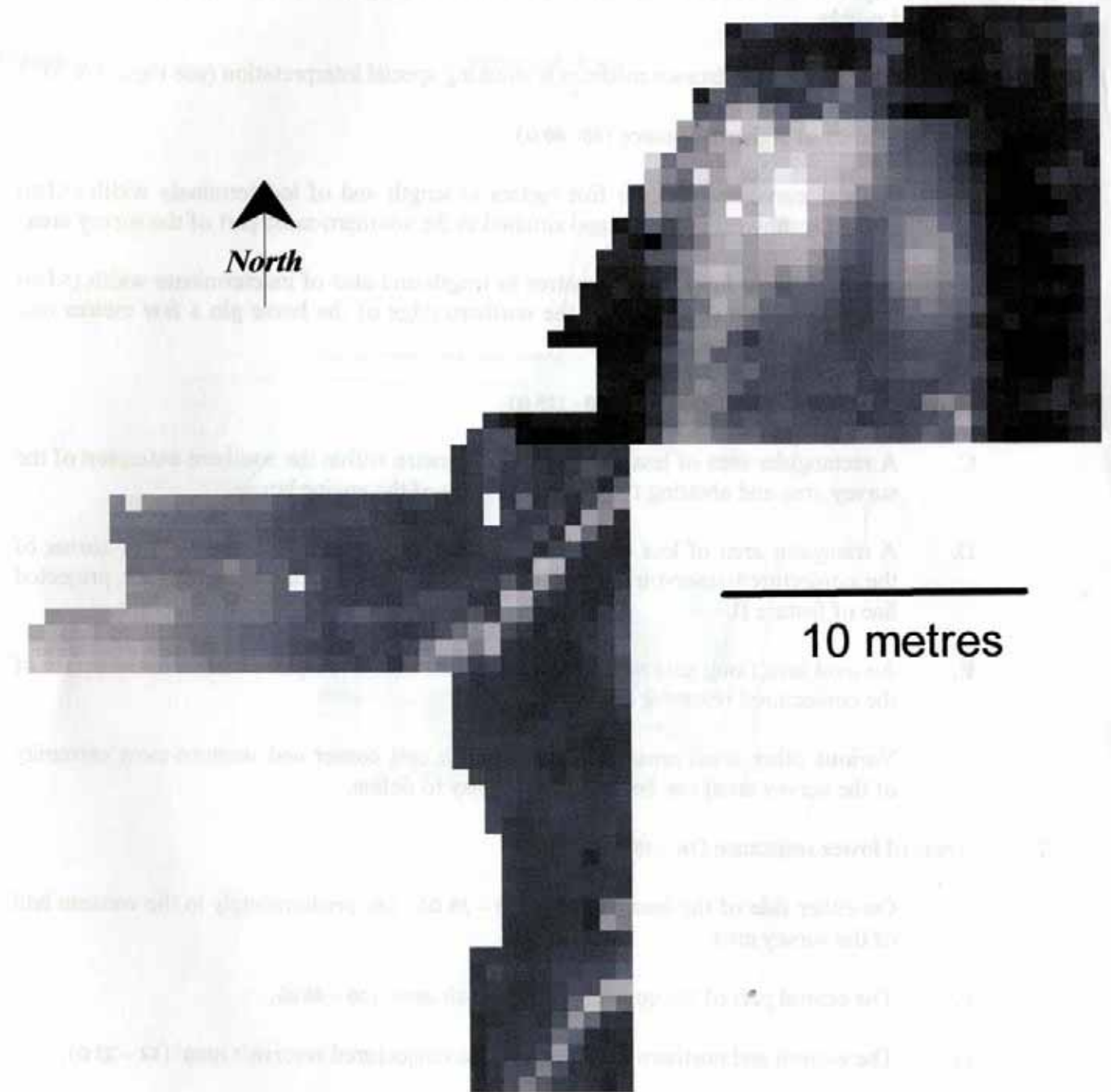
It was unsurprising, considering the industrial history of the site and that during its long period of abandonment it may have been used for other purposes that soil depths were variable as was the stoniness of the ground. The range of resistance readings (12 – 137 ohms) reflected this. Some of the highest readings reached were almost certainly due to chance contact of the remote probes with large stones and rubble

There are three categories of resistance readings warranting special interpretation (see Figs. 4 & 5).

1. Linear features of higher resistance (60– 80 Ω)
 - A. A short curvilinear feature five metres in length and of indeterminate width (<1m) aligned southwest/northeast and situated in the southern-most part of the survey area.
 - B. A longer linear feature eight metres in length and also of indeterminate width (<1m) aligned similarly running from the northern edge of the horse gin a few metres into the conjectured reservoir area.
2. Block features of higher resistance (50– 125 Ω)
 - C. A rectangular area of less than one square metre within the southern extension of the survey area and abutting the excavated walls of the engine house.
 - D. A triangular area of less than thirty square metres towards the north-west corner of the conjectured reservoir area. The long axis of this area aligns with the projected line of feature B.
 - E. An oval area (long axis north – south) of less than five square metres in the centre of the conjectured reservoir area.

Various other small areas (e.g. in the north east corner and western-most extremity of the survey area) can be seen but not easy to define.
3. Areas of lower resistance (16 – 45 Ω)
 - F. On either side of the linear features(25 – 35 Ω), i.e. predominately in the western half of the survey area.
 - F. The central part of the conjectured reservoir area (30 – 45 Ω).
 - G. The eastern and northern perimeters of the conjectured reservoir area (12 – 23 Ω).
 - H. The isthmus connecting the conjectured reservoir area with western part of the survey (16 – 25 Ω).

Figure 4 Ram Hill Resistance Plot – February 2006 (12 – 137 ohms)

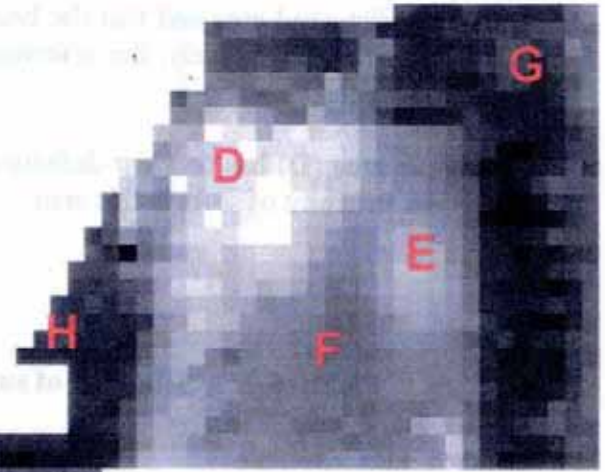


The first part of the excavation of the site (see also the plan of the site) was the excavation of the area around the central structure. This area is shown in the plan of the site and is the area of the excavation shown in the plan of the site.

Figure 5 Ram Hill Resistance Plot – Interpretation (12 – 137 ohms)

The resistance plot shows the distribution of electrical resistance across the site. The plot is divided into eight areas, labeled A through H, which correspond to the areas shown in the plan of the site. The resistance values range from 12 to 137 ohms. The plot shows a clear pattern of resistance, with the highest values (137 ohms) in area G and the lowest values (12 ohms) in area A.

The plan of the site shows the layout of the structures and the location of the resistance plot. The plan is drawn in blue ink and shows the walls, doorways, and other features of the site. The resistance plot is overlaid on the plan, with the areas labeled A through H corresponding to the areas shown in the plan.



10 metres



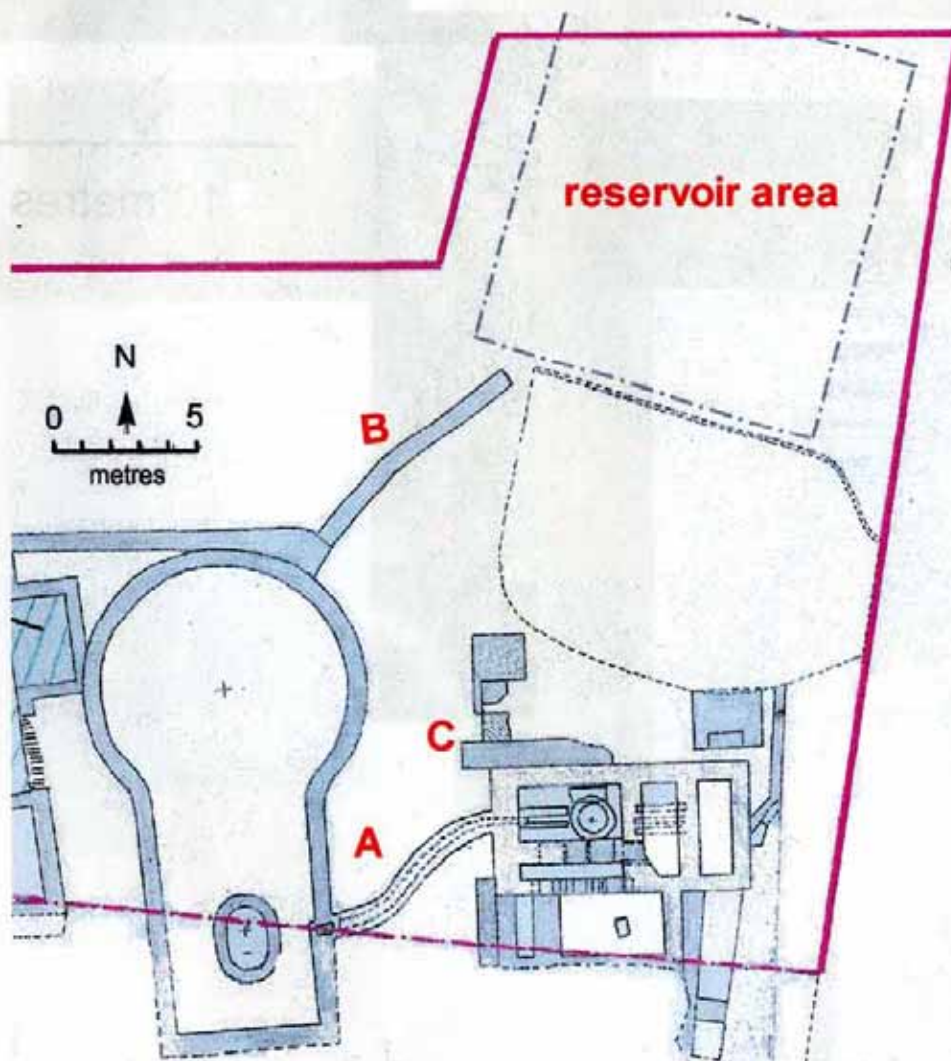
Interpretation

The two linear features of higher resistance (A & B) are confirmation of the structures (walls?) on the pre-existing site plan. The higher resistance block feature (C) likewise is a known extension of the engine house.

The interpretation of the of the suggested "reservoir area" is more conjectural. One may have anticipated a sub-rectangular area of lower resistance bordered by more compacted (higher resistance) banks. Indeed the reverse is true. It is possible that the edges of the "reservoir" have been the least disturbed area and that the basin, rather than become in-filled with silt, has been used as a dumping site. Alternatively, the reservoir could well be brick-lined and this accounting for the higher resistance readings.

The triangular area (D) has no clear definition but its long axis does align with wall B. It is possible that there is a structure of sorts in this area.

Figure 6 Site Plan of surveyed area



Summary and Conclusions

The area surveyed was less than 400 square metres (355 m²), that is smaller than a single standard survey grid. The ground itself was waste industrial land abandoned for over a century, overgrown and littered with dumped material. No great hopes had been raised that any meaningful response would be recorded. In the event, however, pre-existing structures were confirmed and information recovered on the reservoir site that could be of use to future excavations.

Mike Martin
Jill Martin
Andrew Jackson

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