SURVEY RESULTS

2002 / 52 Kew Gardens, Richmond-upon-Thames

1. Survey Areas

1.1 A single area, totalling 0.75ha, was surveyed using electrical resistance, and a smaller portion (0.16 ha) of this area was investigated by gradiometry. In addition, a series of GPR transects were carried out over locations of interest both within the main area and outside, along the conjectural line of a service tunnel. The location of the survey is given in Figure 1 at a scale of 1:1000.

1.2 The survey grid was set out by ***GSB Prospection*** and tied in to the base map by Dr Henry Chapman using a Trimble GPS system.

2. Display

2.1 Figures 2 and 4 are summary greyscale images of the resistance and gradiometer surveys, with accompanying interpretation diagrams in Figures 3 and 5 respectively. Figure 6 shows selected GPR traverses. All are at a scale of 1:500.

2.2 Figures 7-9 show the resistance data in a range of statistical formats and colour images; these are accompanied by an interpretation diagram.

2.3 Figures 10 and 11 present the magnetic data as an XY trace and dot density plots with accompanying interpretation diagram, also at the scale of 1:500.

2.4 The display formats referred to above are discussed in the *Technical Information* section at the end of the text and a complete list of figures precedes the diagrams.

3. General Considerations - Complicating factors

3.1 Conditions on the main lawn were ideal for survey apart from the presence of a few trees, a sundial and several paths / roads. Conditions were less favourable along the conjectured course of the tunnel where dense undergrowth, bushes and trees restricted the area available for survey.

4. Resistance Survey

4.1 Multiple linear high resistance responses are evident in the data and are interpreted as building foundations. In places they appear to form discrete rectangular anomalies though a precise interpretation is impossible (see Conclusions). Some responses could easily represent garden features. However, the results clearly indicate that the remnants of a major building are located due west of the present day Orangery and, although there is no real correlation with early maps, there is little doubt that the readings indicate the site of the White House.

4.2 Low resistance responses are also visible in the data but it is impossible to say whether they are archaeologically significant or simply relate to consolidation of the ground or perhaps earlier garden features.

4.3 Several linear trends are visible crossing the lawns. They are suggestive of modern services or perhaps former paths.

4.4 A circular low resistance anomaly in the south east of the survey area coincides with a tree and associated flower bed and is therefore not archaeologically significant. Similarly an area of blank readings is associated with a smaller tree / shrub.

5. Gradiometer Survey

5.1 The gradiometer data are dominated by strong erratic responses that reflect spreads of building debris and the brick foundations of the walls.

5.2 Given the fact the results were not assisting with the interpretation of the resistance data, no further work was attempted.

6. GPR Survey

6.1 A few transects were surveyed over some of the high resistance responses in an attempt to resolve whether cellars might survive intact. It was also hoped that the GPR might ascertain whether some of the resistance anomalies were associated with near surface paths or deeper foundations. Unfortunately the presence of large quantities of rubble and yard surfaces (discovered during excavation) severely hindered the interpretation of the results.

6.2 The GPR was more successful when used to investigate the tentative line of a tunnel thought to connect the kitchens and the White House. Despite severe problems with overgrown vegetation and trees, it was possible to investigate a few lines at right angles to the conjectured line.

6.3 The results are partially reproduced in Figure 6 and indicate a series of reflections that indicate a linear solid brick or stone feature at a depth of about 75cm. Excavation confirmed the existence of such a feature but the absence of any domed or arched brickwork casts doubt upon its interpretation as a tunnel. More work would be required to resolve this issue.

7. Conclusion

7.1 The resistance survey has revealed rectilinear responses of high and low resistance which share a common orientation, in line with the general location of the lost White House. Unfortunately no clear building plan is visible in the data, reasons for this are given below.

7.2 High resistance readings can result not only from solid stone / brick foundations but also rubble filled robber trenches or modern service trenches. In addition, features backfilled with sand will produce similar results. Unfortunately there is often no difference between the resistance response from wall foundations and features such as former garden paths. GPR transects can help in such instances but complex stratigraphical sites are difficult to interpret from a geophysics point of view. They are also often complicated to excavate and the gardens at Kew proved to be no exception. As a consequence in such circumstances geophysics can often only provide indications of what may be buried below. In the absence of reliable map information, which correlates with the geophysics, it is very difficult to draw meaningful interpretations from

the resistance data, apart from the presence or absence of features of interest. Thus, when at one point during the programme, map evidence came to light which suggested that the White House might be some 20m to the south, the total absence of any high resistance responses in this area allowed the cartographic evidence to be dismissed as erroneous.

7.3 The interpretation of the results from the GPR survey over the main area were hampered by large quantities of rubble and yard surfaces just below the ground level. However, further to the west the data indicated a solid linear 'structure' below about 75cm and although excavation confirmed the presence of a brick feature, whether this is a buried tunnel remains unresolved.

Project Co-ordinators: J Gater
Project Assistants: Dr S Ovenden-Wilson, C Stephens, Dr D Weston and E Wood

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Date of Report: 2nd August 2002

References:

SSEW 1983. *Soils of England and Wales. Sheet 6, South East England.* Soil Survey of England and Wales.

SITE SUMMARY SHEET

2002 / 52 Kew Gardens, Richmond-upon-Thames

NGR: TQ 186 775 (approximate centre)

Location, topography and geology

Kew Gardens extend over an area of 300 acres on the south bank of the River Thames. Richmond lies to the south, East Sheen to the east and Kew to the north. The ground is generally level at approximately 5m AOD. The resistance survey area was lawned, though trees and bushes dominated an area where GPR survey was conducted. The soils will have been extensively modified throughout their history but can be broadly grouped as typical argillic brown earths consisting of well drained coarse loams derived from a parent of gravel (SSEW, 1983). The underlying geology is Kempton Park gravel.

Archaeology

Kew gardens was home to two royal estates, with accompanying royal palaces and buildings. Some of these buildings are still extant, such as Kew Palace. Two palaces and their associated gardens, White House and Richmond lodge, are known to be located within the grounds of Kew Gardens, although their exact location and extent is unclear.

Aims of Survey

The main aim was to locate and identify any detectable archaeological anomalies, with specific reference to the palace known as the White House. This report forms part of a wider archaeological assessment undertaken by Channel 4's **Time Team**.

Summary of Results *

The resistance data show a series of linear and rectilinear high resistance anomalies, all suggestive of building remains and the gradiometer data indicate a corresponding area of magnetic noise. Although no clear plan is discernible in either dataset, the results confirm the general location of the White House, to the west of the Orangery.

In the search for a 'lost serving tunnel' connecting the kitchens and the White House, the GPR survey identified a solid linear feature whose existence was confirmed by excavation, some 75cm below ground level. However, it was not possible to confirm that the brick feature is a tunnel.

*** It is essential that this summary is read in conjunction with the detailed results of the survey.**

List of Figures