ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

on behalf of
CgMs Consulting

Castleview Road
Slough
Berkshire

geophysical survey

report 2883
April 2012

Durham University

Contents

Figures

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1. Summary

The project

1.1 This report presents the results of a geophysical survey conducted in advance of proposed development at Castleview Road, Slough, Berkshire. The works comprised an electrical resistance survey covering 0.72ha.

1.2 The works were commissioned by CgMs Consulting and conducted by Archaeological Services Durham University.

Results

1.3 Probable former ditches were identified across the survey area; some of these correspond with the results of a previous magnetometer survey, while others are recorded for the first time. A possible small stone or rubble concentration has been detected within one enclosure.

1.4 A possible pentangular feature in the geomagnetic survey has not been identified in the resistance data.

1.5 The edge of the 19th-century quarry was identified in the eastern part of the survey area.

1.6 The boundary between the Shepperton and Taplow gravels has been identified.

2. Project background

Location (Figure 1)

2.1 The survey area was located south of Castleview Road, Slough, Berkshire (NGR centre: SU 9935 7855). One survey covering 0.72ha was conducted in one land parcel. To the north was residential housing, to the south and west Upton Court Park and sport pitches and to the east open farmland.

Objective

2.2 A magnetometer survey of the site was undertaken in February 2012 (Butler 2012); additional survey was then requested in order to establish whether structural remains might also be present, to enhance our knowledge of the known anomalies and to establish whether there may be additional anomalies of archaeological significance so that an informed decision may be made regarding the nature and scope of any further scheme of archaeological works that may be required in relation to the development.

Methods statement

2.3 The surveys have been undertaken in accordance with a Written Scheme of Investigation provided by Archaeological Services Durham University and approved by Berkshire Archaeology, and with national standards and guidance (para. 5.1).

Dates

2.4 Fieldwork was undertaken on 2nd and 3rd April 2012. This report was prepared for 17th April 2012.

Personnel

2.5 Fieldwork was conducted by Tony Liddell and Natalie Swann (Supervisor). The geophysical data were processed by Natalie Swann. This report was prepared by Natalie Swann, with illustrations by David Graham, and edited by Duncan Hale, the Project Manager.

Archive/OASIS

2.6 The site code is **SCR12**, for **S**lough **C**astleview **R**oad 20**12**. The survey archive will be supplied on CD to the client for deposition with the project archive in due course. Archaeological Services Durham University is registered with the **O**nline **A**cces**S** to the **I**ndex of archaeological investigation**S** project (**OASIS**). The OASIS ID number for this project is **archaeol3-123029**.

3. Historical and archaeological background

3.1 A geomagnetic survey of the site has previously been undertaken (Butler 2012). This survey found evidence for a droveway with flanking ditches and associated rectangular enclosures of possible late prehistoric or Roman date. A large backfilled 19th-century quarry was also identified on the northern edge of the survey area.

3.2 An archaeological desk-based assessment of the proposed development area (PDA) had already been conducted (Gailey 2011); the results of that assessment are summarised below.

3.3 A number of finds dating to the prehistoric and Roman periods have been made in the wider area around the PDA. These include a Mesolithic stone adze discovered 750m south-west of the site and a scatter of Neolithic flints recorded 1.5km to the south-east.

3.4 Evidence of a Bronze Age settlement has been recorded 1km south of the PDA close to the River Thames at Dachet and an Iron Age settlement has been excavated 1.5km to the south-west at Agars Plough playing field. An archaeological evaluation at Ridings Court Farm, 500m south of the PDA, identified an Iron Age site and two pits dating to the Roman period.

3.5 The site probably lay within arable farmland during the medieval and post-medieval periods. Early Ordnance Survey maps show that a gravel quarry existed in the north of the proposed development area during the nineteenth century.

4. Landuse, topography and geology

4.1 At the time of survey the proposed development area comprised a field of arable farmland.

4.2 The area was predominantly level with a mean elevation of approximately 21m OD.

4.3 The underlying solid geology of the area comprises London Clay Formation. In the northern half of the proposed development area this is overlain by the Taplow Gravel Formation; in the southern half of the site it is overlain by the Shepperton Gravel Member. The survey area covers the boundary between these gravels.

5. Geophysical survey

Standards

5.1 The surveys and reporting were conducted in accordance with English Heritage guidelines, *Geophysical survey in archaeological field evaluation* (David, Linford & Linford 2008); the Institute for Archaeologists (IfA) *Standard and Guidance for archaeological geophysical survey* (2011); the IfA Technical Paper No.6, *The use of geophysical techniques in archaeological evaluations* (Gaffney, Gater & Ovenden 2002); and the Archaeology Data Service *Guide to Good Practice: Geophysical Data in Archaeology* (Schmidt & Ernenwein 2011).

Technique selection

5.2 Geophysical survey enables the relatively rapid and non-invasive identification of sub-surface features of potential archaeological significance and can involve a suite of complementary techniques such as magnetometry, earth electrical resistance, ground-penetrating radar, electromagnetic survey and topsoil magnetic susceptibility survey. Some techniques are more suitable than others in particular situations, depending on site-specific factors including the nature of likely targets; depth of likely targets; ground conditions; proximity of buildings, fences or services and the local geology and drift.

5.3 Magnetometer survey of the site had already detected the likely presence of soil-filled ditches. Electrical resistance survey was requested to establish the presence/absence of structural features. Earth electrical resistance survey can be

particularly useful for mapping stone and brick features. When a small electrical current is injected through the earth it encounters resistance which can be measured. Since resistance is linked to moisture content and porosity, stone and brick features will give relatively high resistance values while soil-filled features, which retain more moisture, will provide relatively low resistance values.

Field methods

5.4 A 20m grid was established across the survey area and related to known, mapped Ordnance Survey points using a Leica GS15 global navigation satellite system (GNSS) with real-time kinematic (RTK) corrections typically providing 10mm accuracy.

5.5 Measurements of earth electrical resistance were determined using Geoscan RM15D Advanced resistance meters and MPX15 multiplexers with a mobile twin probe separation of 0.5m. A zig-zag traverse scheme was employed and data were logged in 20m grid units. The instrument sensitivity was 0.1ohm, the sample interval was 1m and the traverse interval was 1m, thus providing 400 sample measurements per 20m grid unit.

5.6 Data were downloaded on site into a laptop computer for initial processing and storage and subsequently transferred to a desktop computer for processing, interpretation and archiving.

Data processing

5.7 Geoplot v.3 software was used to process the geophysical data and to produce both continuous tone greyscale images and trace plots of the raw (minimally processed) data. Due to the variations in the moisture retention of the two underlying gravel formations two greyscale images and two trace plots have been included in order to show the resistance anomalies more clearly. The greyscale images and interpretations are presented in Figure 2; the trace plots are provided in Figure 3. In the greyscale images, high resistance anomalies are displayed as dark grey and low resistance anomalies as light grey. Palette bars relate the greyscale intensities to anomaly values in ohm.

5.8 The following basic processing functions have been applied to the resistance data:

clip	clips data to specified maximum or minimum values; to eliminate large noise spikes; also generally makes statistical calculations more realistic
add	adds or subtracts a positive or negative constant value to defined blocks of data; used to reduce discontinuity at grid edges
despike	locates and suppresses spikes in data due to poor contact resistance
interpolate	increases the number of data points in a survey to match sample and traverse intervals; in this instance the data have been interpolated to 0.25m x 0.25m intervals

Interpretation: anomaly types

5.9 Two types of resistance anomaly have been distinguished in the data:

high resistance	regions of anomalously high resistance, which may reflect foundations, tracks, paths and other concentrations of stone or brick rubble
low resistance	regions of anomalously low resistance, which may be associated with soil-filled features such as pits and ditches

Interpretation: features

5.10 A colour-coded archaeological interpretation plan is provided.

5.11 The two different types of gravel are clearly distinguished in the data. This is due to the different drainage/moisture retention characteristics of the gravels. The Taplow Gravel Formation in the north is more free-draining (giving higher electrical resistance anomalies) than the Shepperton Gravel in the south, which retains more moisture (lower electrical resistance).

5.12 Several linear and rectilinear low resistance anomalies have been detected across the survey area. These anomalies are likely to reflect soil-filled ditches, some of which appear to form a number of enclosures. Some of the anomalies correspond with the soil-filled features identified during the magnetometer survey of the site (Butler 2012), though some additional probable ditch features have also been identified.

5.13 An angular high resistance anomaly has been detected in the south half of the survey area; this anomaly may reflect a concentration of stone or rubble.

5.14 A possible pentangular feature in the geomagnetic survey has not been identified in the resistance data.

5.15 A linear low resistance anomaly detected in the east of the survey area, aligned approximately north-east/south-west, broadly corresponds to the edge of the backfilled 19th-century quarry and reflects a moisture contrast at the boundary between the backfill and the gravel.

5.16 A former track to the south of the quarry has been detected as a band of high resistance.

6. Conclusions

6.1 Electrical resistance survey was undertaken south of Castleview Road, Slough, Berkshire, prior to proposed development.

6.2 Probable former ditches were identified across the survey area; some of these correspond with the results of a previous magnetometer survey, while others are recorded for the first time. A possible small stone or rubble concentration has been detected within one enclosure.

6.3 A possible pentangular feature in the geomagnetic survey has not been identified in the resistance data.

6.4 The edge of the 19th-century quarry was identified in the eastern part of the survey area.

6.5 The boundary between the Shepperton and Taplow gravels has been identified.

7. Sources

Butler, A, 2012 *Archaeological geophysical survey of land adjacent to Castleview Road, Slough, Berkshire.* Unpublished report **12/25,** Northamptonshire Archaeology.

David, A, Linford, N, & Linford, P, 2008 *Geophysical Survey in Archaeological Field Evaluation*. English Heritage

Gaffney, C, Gater, J, & Ovenden, S, 2002 *The use of geophysical techniques in archaeological evaluations*. Technical Paper **6**, Institute of Field Archaeologists

Gailey, S, 2011 *Archaeological Desk Based Assessment; Land at Castleview Road, Slough.* Unpublished report **13023**, CgMs Consulting

IfA 2011 *Standard and Guidance for archaeological geophysical survey*. Institute for Archaeologists

Schmidt, A, & Ernenwein, E, 2011 *Guide to Good Practice: Geophysical Data in Archaeology*. Archaeology Data Service

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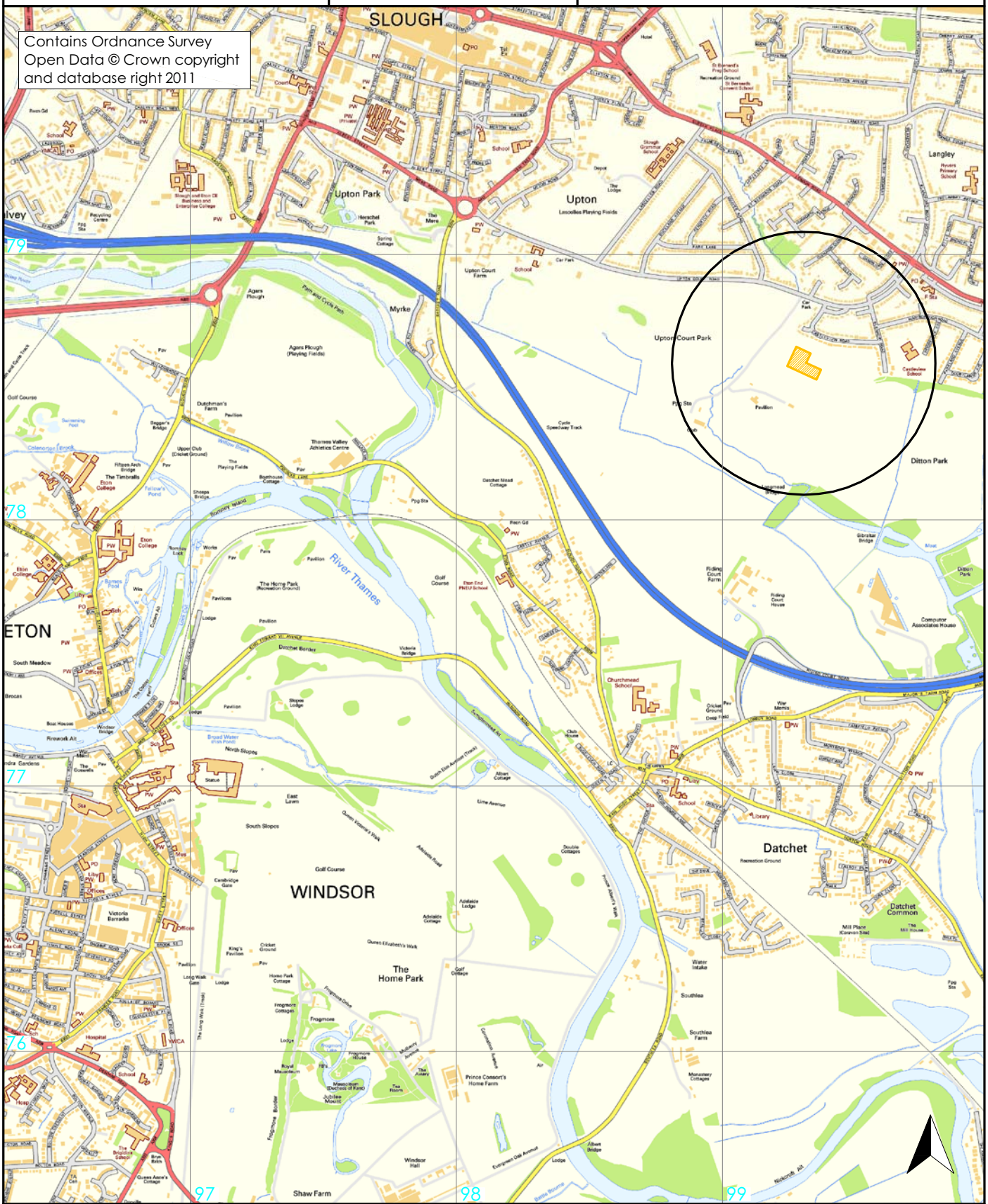
Figure 1: Site location



site location

0 1km

scale 1:20 000 for A4 plot

A

B

C

higher resistance

lower resistance

D

786

993

A - geophysical survey

resistance survey

80 ohm 120

B - geophysical survey

resistance survey

100 ohm 300

C - geophysical interpretation

high resistance anomaly

low resistance anomaly

D - archaeological interpretation

soil-filled feature

stone / rubble

former track

boundary between gravel units

limit of former quarry

0 25m

scale 1:500 for A1 plot

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Figure 2: Geophysical survey and interpretations

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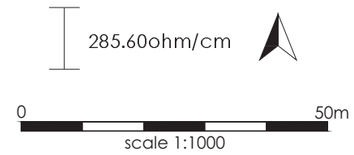
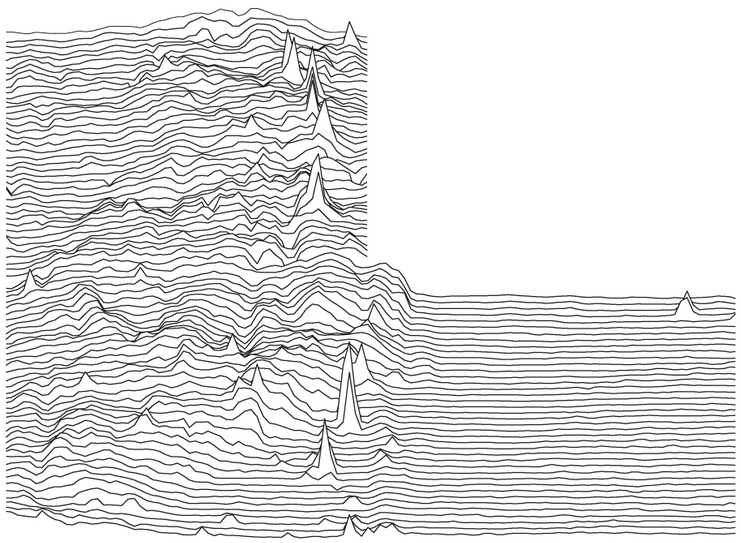
Figure 3:
Trace plots of resistance data

West





East